

ICEM INTERNATIONAL
2016 SCIENTIFIC CONFERENCE
ECONOMICS AND MANAGEMENT

**Smart and Efficient Economy:
Preparation for the Future Innovative Economy**

21st International Scientific Conference

Proceeding of Selected Papers

May 19–20, 2016
Brno, Czech Republic



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PREFACE

It is the honour for us to edit the Proceedings of Selected Papers presented in the 21th International Scientific Conference of Smart and Efficient Economy: Preparation for the Future Innovative Economy held on May 19-20, 2016 in Brno, Czech Republic.

The ICEM Conference has been held in cooperation of the Faculty of School of Economics and Business of the Kaunas University of Technology (Lithuania), the Lithuanian Operational Research Society within EURO (LitORS), Faculty of Engineering Economics and Management of Riga Technical University (Latvia), the Faculty of Business and Management of the Brno University of Technology (Czech Republic), and the Tallinn School of Economics and Business Administration of the Tallinn University of Technology (Estonia).

Associate prof. Ing. et Ing. Stanislav Skapa, Ph.D., the Dean of Faculty of Business and Management, Brno University of Technology, took the honorary patronage over the 21st ICEM Conference.

The primary goal of the conference was to provide a unique platform to facilitate the idea of SMART and efficient economy as the next big opportunity for the future innovative economy. This was achieved through multi-disciplinary presentations and discussions of current issues and conditions of business and entrepreneurship in Europe and the world.

The conference presented not only scientific papers or research issues, but it also deepened old friendships and established new friendships, as well. This kind of conference is a good platform for developing new types of professional friendships and maintaining current networking.

The Faculty of Business and Management of the Brno University of Technology highly promotes international research cooperation.

More than 140 presentations were introduced within the plenary session and parallel sections. We welcomed in Brno Professor David Smallbone, who works as the Professor of Small Business and Entrepreneurship and Associate Director of the Small Business Research Centre at Kingston University. The key ideas of the ICEM 2016 were also discussed in a panel session where we could hear the exchange of ideas between academics and practitioners. We welcomed more than 100 participants from over 20 countries.

The Programme Committee of the Scientific Conference (29 international professionals from 12 countries: Lithuania, the Czech Republic, Latvia, Estonia, Poland, Spain, France, Netherlands, the USA, the United Arab Emirates, and Malaysia) assessed totally 211 submissions of international authors affiliated mostly with universities in the European Union, which confirms a long-lasting international recognition of the Conference. A total of 211 papers and abstracts were subject to peer review by the renowned team of reviewers.

The Proceedings contain the selected papers from 12 sections: Challenges and Opportunities of Financial Economics and Corporate Finance, Challenges of Human Resources in the World without Borders, Contemporary Marketing: Inspiration and Implementation, Corporate Social Responsibility: Interaction of Business, Society and the Staff, Global Economy and Competitiveness of Nations, Horizons of Accounting, Operations Management after the 4th Industrial Revolution, Strategic Management in an Open Economy: Entrepreneurship, Innovation and Internationalization, Trends of Accounting and Reporting in Public Sector and NGOs, Public Finances, Taxes and Challenges for Law, Efficiency of Information Systems in Corporate Practice, and Quantitative Methods and their use in Economics Models.

As the managing editors of the Proceedings, we are glad to see a variety of papers focusing on the smart and efficient economy and perspectives of preparation for the future innovative economy. Out of 211 submissions, 140 abstracts (66% acceptance rate) qualified for the approval of the Scientific Programme Committee and for presentation at the Conference scientific sessions and 91 high quality research papers (43% selection rate) were selected to the Proceedings of selected papers.

We would like to express our special thanks are to all our international partners, representatives of the companies, reviewers, the members of international scientific programme committee and all the members of the organisational committee. We would like to thank all who contributed in every process to publishing these Proceedings.

Managing Editors

Iveta Simberova, Ondej Zizlavsky and Frantisek Milichovsky

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MAREK VOCHOZKA

21st International Scientific Conference Economics and Management

ABOUT CONFERENCE

The honorary patronage over the conference took the dean of Faculty of Business and Management, Brno University of Technology Ass. prof. Ing. et Ing. Stanislav Skapa, Ph.D.



The 21st International Conference Economics and Management took place **from 19^h to 20th May, 2016** and are hosted by Faculty of Business and Management, Brno University of Technology, Brno, Czech Republic.

The primary objective of the conference has been to bring together scientists and researchers for a general scientific discussion about changes in economics and management occurring throughout businesses and studying processes in the context of globalisation. The main topic of 21st ICEM conference is **Smart and Efficient Economy: Preparation for the Future Innovative Economy**.

The conference has been held cooperating together Faculty of School of Economics and Business of Kaunas University of Technology (Lithuania), Lithuanian Operational Research Society within EURO (LitORS), Faculty of Engineering Economics and Management of Riga Technical University (Latvia), Faculty of Business and Management of Brno University of Technology (Czech Republic), and Tallinn School of Economics and Business Administration of Tallinn University of Technology (Estonia).

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**SECTION 1
CHALLENGES AND OPPORTUNITIES OF FINANCIAL ECONOMICS
AND CORPORATING FINANCE**

*RELIABILITY OF MODELS PREDICTING FINANCIAL DISTRESS – NATIONAL
AND TRANSITION APPROACHES*

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Abstract

Purpose of the article This paper is focused on the explanatory power of models predicting financial distress (also called bankruptcy models). This paper should compare results gained by several dozens models which were created in transition economies (Czech Republic, Poland, Hungary and Baltic states) after economic-political shift at the end of 1980's. Verification is performed on financial accounting data of Czech enterprises therefore Czech models present national approach. The models from other economies are examples of non-national approaches in this case.

Methodology/methods The necessary step is a quality review of literature because transition models have to be detected not only by their names but also by their formulas and recommendations for practical use. The verification of the selected models predicting financial distress will be based on the elementary verification tools as computation Type I Error and Type II Error accompanied by reliability ratio. The greatest benefit of these tools is that the results can be introduced to auditorium without prerequisite knowledge.

Scientific aim The scientific aim is to find the models predicting financial distress which have the highest accuracy and provide the most reliable results for further decision making. The second research question is based on the comparison of national approaches (in our case Czech models) and approaches from other transition economies. Critique of the models predicting financial distress is very often connected with the issue that only national models can provide enough accuracy and approaches from other economies have worse results.

Findings Findings will be the models predicting financial distress which have high explanatory power and comparison of national and non-national approaches.

Conclusions The main conclusions are comparison and answers which models have the highest accuracy and if we should prefer national approaches. Limit depends on the used data samples of defaulted and non-defaulted entities. Data samples contain almost 100 defaulted entities and more than 650 non-defaulted entities. These entities belong to manufacturing and construction industries which are not homogenous.

Keywords: accuracy, bankruptcy models, Czech Republic, Czech approaches, financial viability, reliability, transition approaches.

JEL Classification: M21, G33

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Introduction

The need of prediction financial viability and continued duration is crucial for many entities on the market. There are available many approaches and methods which can be used for this purpose. The specific use is based on importance of decision making, disposable time, budget and information availability. The prediction can be done by the entity itself or by specialized provider represented by scoring or rating agency. For a quick evaluation all entities use scoring approaches which are based on the evaluation from basic financial accounting statements. The beginnings of scoring approaches are connected with names as Altman (1968) and Beaver (1966).

The paper's aim is to compare approaches predicting financial distress which have been constructed in the transition countries after the political shift in 1989. Verification is performed on financial accounting data of Czech enterprises therefore Czech models present national approach. Approaches created in other economies present non-national models for this paper. The paper should answer a question which models have the highest accuracy for predicting financial distress on one hand and financial viability on the other hand. The conclusion would be a recommendation which models should be used for decision making because they provide reliable results and which models should not be used because their accuracy is low. The related question is coming with the geographical area of a models' construction. The roots of all verified models are in the transition countries which have had comparable political and economic development. These countries have also other similarities connected with history, demography etc. Although there are discussions that strictly national approaches should be applied to national data. The conclusion would be if Czech models provide better results than the non-national models or there are not such significant differences based on the geographic area of models' construction.

1 Literature review

This paper is focused on the verification of models predicting financial distress constructed in Central and Eastern Europe. The Czech Republic and other countries belonging to Easter block were in different position 50 years ago when these scoring approaches also called models predicting financial distress or bankruptcy models occurred in the United States. The economic system of these countries was not based on concept of the free market economy but on the concept of centrally planned economy. The financial viability and continued duration was a result of decision making process of central authorities without respect to economic, technic and other organizational performance and successes. The situation completely changed after 1989 because of political shift. From the economic point of view the centrally planned economy was replaced by the concept of free market economy. These countries are called transition economies or nowadays already posttransition economies because the implementation of the different economic system is not finished immediately but it needs its time to fully functioning.

The change of economic system has also brought the necessity of bankruptcy prediction because the continued duration was not guaranteed by the central authorities anymore. If the business entity wants to successfully exist for a long time on the market it has to deal with entities which are able to fulfill contract conditions and thereof their financial viability has to be monitored regularly. In 1990's the first step was implementation of foreign approaches evaluating financial viability. These approaches came from developed countries. The beginnings of scoring approaches are connected especially with Altman (1968) whose models are still used. The second step was creation of own approaches because of the critique that only national approaches can have the highest reliability and can provide the most accurate predictions. Critical assessment of models predicting financial distress done by Platt and Platt (1990), Grice and Dugan (2001), Niemann et al (2008) and Wu, Gaunt and Gray (2010) is that models' accuracy significantly falls when the approaches are applied to other initial conditions. Different time period, industry branch or economic-political environment is meant as a basis for initial conditions.

The models will be divided into two groups – national and transition approaches because the verification will be done on the enterprise data from the Czech Republic. The amount of approaches presented in this paper is not exhaustive because of several immediately mentioned reasons. Some approaches have not been published because they are part of enterprises's know-how as in the case of banks and other financial institutions. Many research contributions were unfortunately published only in national languages and the period of 1990's was not the period of electronic public evidence yet. Then it is coming the reason that all researches have time and money limitations.

Following paragraphs will introduce the verified approaches. Due to their amount and paper's page limitation the full formulas will not be introduced. Details about specific approaches could be found in the relevant literature which is mentioned. The Czech models predicting financial distress are following the family indices IN – IN99, IN01 (Neumaierová and Neumaier, 2002) and IN05 (Neumaierová and Neumaier, 2005), followed by

Grünwald Bonita Index (Grünwald, 2001) and Balance Analysis System by Rudolf Doucha (Doucha, 1996). New concepts are still occurring as Hálek (2013) or Karas and Režňáková (2013). The two last mentioned cannot be verified because of reasons which are detailed in Čámská (2014). The Czech approaches are followed by approaches developed or used in countries as Poland, Hungary or Baltic states (Latvia, Lithuania and Estonia). Also in Slovakia two indices were created but they are specific for agriculture sector and therefore they are not appropriate for these paper's purposes. Two Hungarian authors Hajdu and Virág (2001) constructed the model based on logistic regression as well as traditional discriminant analysis. The verified Polish models predicting financial distress are Hadasik (Hamrol and Chodakowski, 2008), Holda (Pociecha, 2005 and Hamrol and Chodakowski, 2008), Gajdka & Stoda (Kisielinska and Waszkowski, 2010 and Hamrol and Chodakowski, 2008), Prusak (Kisielinska and Waszkowski, 2010), PAN-C, PAN-D, PAN-E, PAN-F, PAN-G, Wierzba, Poznanski, D1, D2, D3, D4 (all previous discussed in Kisielinska and Waszkowski, 2010), Apenzeller & Szarzec, Pogodzinska & Sojak, Sojak & Stawicki (all previous discussed Hamrol and Chodakowski, 2008). Then there are Baltic approaches as Šorins & Voronova (Jansone, Nespors and Voronova, 2010), Merkevicus (Merkevicus et al, 2006), two factor model (Koleda and Lace, 2009), Stoškus (Stoškus et al, 2007), Genriha & Voronova (Genriha, Pettere and Voronova, 2011) and R model (Davidova, 1999).

2 Methodology and Objectives

Used research methods verify the reliability of models predicting financial distress. Several tools exist for a possible verification. An indisputable position among metrics has tools as Type I Error, Type II Error or even Total Error. Advantages of this approach are simplicity, quickness and clearness for an explaining part. When the results are introduced to auditorium there is no need of prerequisite knowledge about the verified tools. The idea of Type I Error and Type II Error is natural. Table 1 provides a graphical description of Errors.

Table 1 Type I Error and Type II Error

		Estimated	
		Non-Default	Default
Observed	Non-default	True	False Alarm (Type II Error)
	Default	Miss (Type I Error)	True

Source: Fernandes (2005)

Type I Error means that a defaulted entity is classified as a non-defaulted entity by the particular model predicting financial distress. Type II Error is a mistake in the case of classification of non-defaulted entity. It means that non-defaulted entity is classified as a defaulted entity by the particular model predicting financial distress. The total error rate would be a figure of all mistakes divided by a number of analysed entities. The total error rate is not an appropriate tool when the analysed entities are not balanced in observed groups (in general terms healthy and unhealthy). It has to be taken into account that models predicting financial distress work on probabilistic roots and they can never be a physical law. The implication is that never all entities will be classified correctly. The general consensus is a figure lower 20% when error rate is expressed as a relative number.

The selected models predicting financial distress will be verified on the accounting data of Czech enterprises. The analysed enterprises are divided into two data samples which are strictly polarised. The first data sample contains non-defaulted entities (low risk of bankruptcy). The non-defaulted entities for the purpose of this research are defined as entities creating positive economic value added in the years 2010, 2011 and 2012. Although economic value added has its disadvantages it is very good measure of achieving corporate goals which are usually defined as the increase of the originally invested capital (Synek and Kislingerová, 2010 or Veber and Srpová, 2005). The second data sample consists of defaulted entities whose definition for the purpose of this research is based on a data availability. The definition of the defaulted entities is based on a legal term insolvency proposal from the Czech legal framework, concretely Act No. 186/2006 Coll, Bankruptcy and Settlement. The insolvency proposals should have been declared in years 2012, 2013 and first months of 2014. This enables the comparable time frame between the two analysed subgroups. The limitation was availability of financial statements although they should be published regularly according to law many enterprises do not fulfil this requirement (Czech Credit Bureau, 2013 or Čámská, 2013).

The analysed entities belong to manufacturing and construction industry. This approach that particular industry branches are selected is traditional for this kind of research (Klečka and Scholleová, 2010; Karas and Režňáková, 2013 or Čámská, 2015).

3 Results

This chapter is dedicated to a description of results gained by the verification of models predicting financial distress. Majority of tested approaches work with two or three possible evaluation zones – healthy, grey and unhealthy. The meaning of polarised ends – healthy and unhealthy is clear. The grey zone represents the evaluation in which the specific approach is not able to provide a clear conclusion about enterprise financial viability. Some models do not use grey zone and their conclusions are only strictly polarised. In following tables (2 and 3) the case of non-existing grey zone is solved by a used mark ---. Then there can also be exceptions as Grünwald approach and R model which are based on more evaluation zones. The results of these two already mentioned approaches are displayed in the separated tables (4 and 5).

Tables 2 and 3 have the same structure. They display the results from verification in absolute figures - division of analysed entities into evaluation zones. Relative figures are represented by the reliability ratio and error ratio. The reliability ratio is defined as a ratio of all entities classified correctly divided by all analysed entities. The error ratio is computed as a ratio of all entities classified incorrectly by all analysed entities. The sum of the error ratio and the reliability ratio does not have to be equal to one because of existence of grey zone. Table 2 shows results from verification on defaulted entities.

Table 2 Evaluation of national and transition approaches on defaulted entities

Approach	Unhealthy	Healthy	Grey Zone	Unevaluated	Reliability	Type I Error
IN99	71	6	20	1	0.72	0.06
IN01	77	3	17	1	0.79	0.03
IN05	83	5	9	1	0.85	0.05
Doucha	51	19	12	16	0.52	0.19
Hadasik	68	26	---	4	0.69	0.27
Holda1	1	95	0	2	0.01	0.97
Holda2	25	65	6	2	0.26	0.66
Gajdka&Stoda 1	26	68	---	4	0.27	0.69
Gajdka&Stoda 2	16	44	36	2	0.16	0.45
Prusak 1	84	5	5	4	0.86	0.05
Prusak 2	90	2	5	1	0.92	0.02
PAN-C	35	42	---	21	0.36	0.43
PAN-D	31	48	---	19	0.32	0.49
PAN-E	67	15	---	16	0.68	0.15
PAN-F	83	14	---	1	0.85	0.14
PAN-G	84	13	---	1	0.86	0.13
Wierzba 1	44	50	---	4	0.45	0.51
Wierzba 2	40	54	---	4	0.41	0.55
Poznanski	78	16	---	4	0.80	0.16
D1	97	1	---	0	0.99	0.01
D2	78	16	---	4	0.80	0.16
D3	88	6	---	4	0.90	0.06
D4	89	5	---	4	0.91	0.05

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Appenzeller&Szarzec	38	30	---	30	0.39	0.31
Pogodzinka&Sojak	14	36	---	5	0.14	0.37
Sojak&Stawicki	45	9	27	17	0.46	0.09
Hajdu&Virág	12	85	---	1	0.12	0.87
Hajdu&Virág-logistic	82	12	---	4	0.84	0.12
Šorins&Voronova	92	5	---	1	0.94	0.05
Merkevicius	94	3	---	1	0.96	0.03
2faktors_1	9	88	---	1	0.09	0.90
2faktors_2	62	3	32	1	0.63	0.03
2faktors_3	5	78	---	15	0.05	0.80
Stoškus	30	64	0	4	0.31	0.65
Genriha&Voronova	25	72	---	1	0.26	0.73

Source: own computation based on financial accounting data

Type I Error has to be lower than 20-25% otherwise more than every 5th valuated enterprise is classified incorrectly. This condition is not fulfilled by the following approaches – Hadasik, Holda 1, Holda 2, Gajdka&Stoda 1, Gajdka&Stoda 2, PAN-C, PAN-D, Wierzba 1, Wierzba 2, Appenzeller&Szarzec, Pogodzinka&Sojak, Hajdu&Virág, 2faktors_1, 2faktors_3, Stoškus and Genriha&Voronova. Also the reliability rate is an important characteristic and therefore are at least questionable the results for approaches as Sojak&Stawicki and Doucha.

Table 2 verifies the selected approaches on defaulted entities but there is also second group – non-defaulted entities. The approaches have to provide the reliable results not only for one group but for both otherwise their explanatory power would be low in practise. In practise expert does not know if the evaluated entity is defaulted or not.

Table 3 Evaluation of national and transition approaches on non-defaulted entities

	Unhealthy	Healthy	Grey Zone	Unevaluated	Reliability	Type II Error
IN99	17	157	485	1	0.24	0.03
IN01	6	364	289	1	0.55	0.01
IN05	18	424	217	1	0.64	0.03
Doucha	89	297	262	12	0.45	0.13
Hadasik	75	582	---	3	0.88	0.11
Holda1	1	658	0	1	1.00	0.00
Holda2	4	635	20	1	0.96	0.01
Gajdka&Stoda 1	19	639	---	2	0.97	0.03
Gajdka&Stoda 2	75	543	41	1	0.82	0.11
Prusak 1	89	415	153	3	0.63	0.13
Prusak 2	121	368	170	1	0.56	0.18
PAN-C	1	647	---	12	0.98	0.00
PAN-D	1	647	---	12	0.98	0.00
PAN-E	10	639	---	11	0.97	0.02
PAN-F	15	644	---	1	0.98	0.02

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PAN-G	38	621	---	1	0.94	0.06
Wierzba 1	0	657	---	3	1.00	0.00
Wierzba 2	0	657	---	3	1.00	0.00
Poznanski	85	572	---	3	0.87	0.13
D1	365	295	---	0	0.45	0.55
D2	103	555	---	2	0.84	0.16
D3	196	461	---	3	0.70	0.30
D4	350	306	---	4	0.46	0.53
Appenzeller&Szarzec	10	606	---	44	0.92	0.02
Pogodzinka&Sojak	1	656	0	3	0.99	0.00
Sojak&Stawicki	46	532	70	12	0.81	0.07
Hajdu&Virág	14	645	---	1	0.98	0.02
Hajdu&Virág-logistic	194	461	---	5	0.70	0.29
Šorins&Voronova	89	570	---	1	0.86	0.13
Merkevicius	226	433	---	1	0.66	0.34
2faktors_1	11	647	---	2	0.98	0.02
2faktors_2	643	1	15	1	0.00	0.97
2faktors_3	1	658	---	1	1.00	0.00
Stoškus	433	224	0	3	0.34	0.66
Genriha&Voronova	4	654	---	2	0.99	0.01

Source: own computation based on financial accounting data

Table 3 verifies the selected approaches on non-defaulted entities. Type II Error has to be lower than 20-25% otherwise more than every 5th valued enterprise is classified incorrectly. This condition is not fulfilled by the following approaches – D1, D2, D3, D4, Hajdú&Virág_logistic, Merkevicius, 2faktors_2 and Stoškus. The results are not comparable for defaulted and non-defaulted entities because some models punish healthy entities by a strict classification and others are too weak and they classify unhealthy entities as healthy.

Tables 4 and 5 contain results for models having more evaluation zones. Grünwald approach does not have high values of error rates but the reliability is not perfect. It is not caused by the grey zone but by the amount of entities which were not evaluated because it was not possible due to financial items equal to zero. On the other hand R model has high reliability ratio and low error rates for both groups – defaulted and non-defaulted.

Table 4 Evaluation of Grünwald approach

	Defaulted entities	Non-defaulted entities
Very unhealthy	48	11
Unhealthy	2	1
Good health	2	33
Very good health	9	423
Unevaluated	37	192
Reliability	0.49	0.64
Error	0.09	0.02

Source: own computation based on financial accounting data

Table 5 Evaluation of R model

Probability of bankruptcy	Defaulted entities	Non-defaulted entities
is lower than 10%	20	568
is 15-20%	0	4
is 35-50%	0	8
is 60-80%	2	12
is 90-100%	75	68
Unevaluated	1	0
Reliability	0.77	0.86
Error	0.20	0.10

Source: own computation based on financial accounting data

Intersection of results displayed in tables 2-5 provides the models predicting financial distress which have low error ratios and high reliability ratios for both analysed groups – defaulted as well as non-defaulted. Specifically, these models are the Czech models from IN family IN99, IN01 and IN05, then Doucha, Polish models are represented by Prusak, PAN-E, PAN-F, PAN-G, Poznanski, Sojak&Stawicki and Baltic approaches by Šorins&Voronova. Although the most models comes from the Czech Republic we have to take into account that IN family is based on the same ratios, created by the same authors and they are only time actualizations of each other.

If we should compare results for national and non-national models the assumption that national models would have significantly higher accuracy than non-national approaches has not been proved. On one hand there are 3 models from the family IN and Doucha but there are also 6 Polish models and one Baltic approach which provided comparable results. It means they were able to predict financial distress for defaulted entities and financial viability for non-defaulted entities although these entities are from the Czech Republic. The above-listed non-national models provided reliable answers as the above-listed Czech approaches.

4 Discussion

The gained results have not proved that it is possible to use only national approaches for successful business evaluation because also transition approaches reached the sufficient level. The highest accuracy or the best reliability was reached by the approaches - IN99, IN01, IN05, Doucha, Prusak, PAN-E, PAN-F, PAN-G, Poznanski, Sojak&Stawicki and Šorins&Voronova. The data sample which was used for the valuation was not homogenous because there were entities belonging to the manufacture industry and construction industry. Businesses belonging to different industry branches can have different financial characteristics and therefore some models predicting financial distress can be more appropriate than others because they respect more industrial specifics. Probably especially construction industry will have some exceptions as a longer production cycle, capital structure etc. Another lines of research can lead to industry branches specifics and dividing analysed business entities according industry branches. The models predicting financial distress are usually designed with financial accounting data from manufacturing industry and they do not have enough explanatory power for other economic sectors.

Conclusion

This paper was focused on the verification of models predicting financial distress. The verified models were created in the transition economies after the political shift at the end of 80's or the beginning of 90's. The Czech models represented the national approach for the evaluated business entities. The paper has not proved that the national approaches would provide better results and information for decision making and then the approaches from other transition economies. In both groups there are models which provided excellent results or which totally failed. The highest accuracy or the best reliability was reached by the approaches - IN99, IN01, IN05, Doucha, Prusak, PAN-E, PAN-F, PAN-G, Poznanski, Sojak&Stawicki and Šorins&Voronova. It means that 4 Czech approaches, 6 Polish models and one Baltic approach provide reliable results. On the other hand models as Grünwald Bonita Index, Hajdu and Virág, Hadasik, Gajdka & Stoda, PAN-C, PAN-D, Wierzba, D1, D2, D3, D4, Apenzeller & Szarzec, Pogodzinska & Sojak, Merkevicus or two factor model failed from different reasons.

The models predicting financial distress with the low explanatory power does not have to be analysed further. On the other hand the models which were not excluded yet should be further verified. To sum it up there are reliable as well as unreliable models and it does not matter in which countries they were designed. The differences between national and other transition approaches are not significant for the valuated data sample. The models will never classify correctly all valuated entities and errors will always occur.

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*COMPARISON BETWEEN INVESTMENT ACTIVITIES OF FAMILY
BUSINESSES IN POLAND AND IN OTHER EUROPEAN COUNTRIES*

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Abstract

Purpose of the article The aim of this article is to describe and discuss investment activities of family businesses in Poland as compared to the corresponding activities in particular European countries. The paper is of both theoretical and empirical character. Terms such as “investment” and “investing” have been discussed as well as issues regarding the functioning and activity of family businesses. The article presents and examines results of the research “Family businesses barometer. Awaiting changes”, which is a consecutive edition of KPMG report.

Methodology/methods Apart from the theoretical analysis of the terms regarding investment activity of family businesses, research report has been presented and discussed. Computer Assisted Web Interview was employed as a research method. Interviews were conducted from the May 1st to July 5th 2015. Apart from Poland, following countries participated in the research: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, Finland, France, Greece, Spain, the Netherlands, Ireland, Lithuania, Latvia, Malta, Germany, Portugal, Romania, Slovakia, Sweden, Hungary, Great Britain and Italy.

Scientific aim The general aim of this article was the analysis of the specificity of the activity of family businesses – their problems, expected changes and strategies they implement in their economic entities. “Barometr firm rodzinnych. W oczekiwaniu na zmiany” (“Family businesses barometer. Awaiting changes”) is a special research covering European countries and is repeated semi-annually. Due to this data, there is a possibility to follow changes occurring in time in the assessment of the companies. Moreover, we can compare domestic entrepreneurship with the European one.

Findings Polish family businesses as compared with the ones in other European countries look less optimistically into the future in comparison with previous years. These companies focus, to a large extent, on maintaining their previous income, employment and foreign investments rather than focus on profit maximization.

Conclusions Increasing labour costs, tougher competition and unstable political situation are a cause for concern to family businesses when they conduct investment activities. They expect changes such as lower tax rate, simplified tax system and lower non-wage labour costs. These firms believe that due to this kind of changes they could further develop their activity.

Keywords: Polish family businesses, European family businesses, investment activity, Family businesses barometer, statistical data.

JEL Classification: D21, E22, L20

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Introduction

The main short-term goal of economic activity in the free market economy is the profit (income) maximization of the owners. Along with this classic criterion, increasing market value of the firm is mentioned increasingly often as a medium and long-term goal. One of the most important factors enabling the firm to achieve these goals is investing.

Investing is one of the human's main activities in the field of economics and investments in the market economy are an essential condition for the development of the company. Investments are also perceived as the most important way of increasing owners' assets and as a priority for economic growth (Wolak-Tuzimek, 2011, p. 345).

In the literature three main types of investments are distinguished (Gostkowska-Drzewnicka, 1996, p. 12):

- financial – reflecting the money flow, involving financial assets;
- tangible – reflecting the flow of goods, involving tangible assets;
- intangible – involving assets such as licences or trademarks.

It is also vital that investments are capital expenditures incurred for different types of ventures. Their goal is to deliver results. These results include profit increase, cash flows, extension of production, technology modernization, increase in market share, increase in market value or improvement in competitiveness (Skowronek-Mielczarek, Leszczyński, 2008, p. 261).

Investing is also employing capital in order to increase it and it refers to allocating financial means between various types of economic activity. Investing is also one of the components of the long-term development strategy of a business (Wolak-Tuzimek, 2010, p. 73).

In Poland as well as all across the world there are many family businesses where managing the business is handed down from generation to generation. They strive for continuous development, improvements as well as profit maximization and loss minimization (Firma w rodzinie czy rodzina w firmie, 2012, p. 16).

Family companies were essence of a businesses over the centuries. Companies passed from one generation to the next were the first way to get rich (Fuller, 2003, p. 305). The family was the main source of financial and human and resources. Business families also include other meanings related to non-economic gains of owning a family company (Randerson, Dossena, Fayolle, 2016, p. 37).

The definition of family firm – a company managed with the intention to accomplish the vision of the company held by a predominant coalition controlled by people related by blood or marriage in such a way that is potentially sustained across generations of the family (Bergamaschi, Randerson, 2016, p. 55). Family firm is a company managed with the intention to accomplish the vision of the company held by a predominant coalition controlled by people related by blood or marriage in such a way that is potentially sustained across generations of the family.

Family company is an entity, where capital (for certain, at least the majority of it) stays in the hands of the family. This kind of enterprises are also characterized by the fact that more than one family member receives remuneration for work. Generally speaking, the key feature of this type of organization is the concentration of management and financial control in one family (Firma w rodzinie czy rodzina w firmie, 2012, p. 16).

Family businesses should meet the following conditions:

- at least one family member holds considerable part of the firm's capital;
- family members keep substantial control over the company;
- family members hold key positions in the company.

Family businesses are characterized by few specific elements, containing family's capital, long-term orientation and risk awareness (Zaefarian, Eng, Tasavori, 2016, p. 334).

Family companies have a wide range of advantages. Their main benefits, especially of micro and small firms, are (Żeńcuch, 1998):

- ability to quickly develop innovations desirable on the market;
- flexibility and adaptability to market conditions;
- ability to create a family atmosphere;
- constriction of bureaucratic structures;
- ability to self-finance its operations as a result of refinancing the profit.

Family businesses have been present for a long time in economies of all countries. They create a natural form of family and local entrepreneurship, which under propitious conditions, develops and lasts for generations

(Więcek-Janka, 2013, p. 35). Polish law does not separately define the term “family business”. Businesses where at least 51% of company’s worth belongs to people related to each other are commonly referred to as family businesses (Sułkowska, 2011, p. 10).

There is no doubt that family businesses are diverse with regard to many aspects (industry, size, genesis, experience, market position, wealth and the like). Unarguably then they differ a lot, but they also have many things in common. Not necessarily the industry or the size, but the family character. It makes them stand out and means that businessmen have similar values and believes. Quite the contrary, in difficult situations the family tries to rescue the business. At these times nobody thinks or asks for holidays or remuneration.

Family and business are undoubtedly two spheres which overlap and one can risk to state that functioning of family businesses is more difficult than any other. Nonetheless every family tries to find ways to handle this. (Projekt szkoleniowo-doradczy Firmy rodzinne 2, 2015).

1 Economic situation of family businesses in Poland and in Europe

In the latest report „Family businesses barometer. Awaiting the change” research findings regarding the economic situation of family businesses in Poland as well as in Europe have been presented. In comparison with 2014 Polish companies look into the future increasingly more cautiously. On the other hand, in Europe there is a continuous wave of optimism and more and more companies positively assess their financial standing and plans for the upcoming year.

According to statistical data less than 47% of family businesses in Poland assess their economic situation as good or very good. In comparison to previous year the number fell by 10 percentage points. 40% of Polish respondents assessed its situation as neutral. It’s worth underlining that the number of companies that assess its situation as bad or very bad increased (from 7% to 13%).

In Europe results concerning the economic situation of family companies are much better. 75% of European respondents evaluate their situation as good or very good for the upcoming year. In comparison to December 2013 the number went up by over 20 percentage points. As to companies assessing their situation as bad or very bad the number as compared to 2014 rose only by 3 percentage points.

Table 1 Assessment of family businesses with regard to their economic situation for the upcoming year (in %)

Period Assessment	Poland				Europe			
	December 2013	June 2014	December 2014	September 2015	December 2013	June 2014	December 2014	September 2015
Good and very good	-	58	57	47	54	71	70	75
Neutral	-	29	36	40	34	21	25	17
Bad and very bad	-	13	7	13	12	8	5	8

Source: own compilation based on the: Barometr firm rodzinnych, 2015b, p. 5

When it comes to revenues and employment in family businesses in Poland they record falls. As stated in the report, 22% recorded an increase in revenues, which is 19 percentage points less than in the previous year (in December 2014 this number was 41%). However, at the same time, proportion of the companies, whose revenues decreased, has risen. In September 2015 the percentage was 27% whereas in the previous year it fluctuated around 15%. In case of European companies their revenues are getting higher year by year. In the last 12 months the proportion of the companies, which increased revenues reached 58% (Table 2).

Table 2. Activity of family businesses in the last 12 months (%)

Criteria Assessment	Poland			Europe		
	Revenues	Employment	Foreign activity	Revenues	Employment	Foreign activity
Increased	22	17	34	58	46	58
Remained	51	63	55	26	38	35
Decreased	27	20	11	16	16	7

Source: own compilation based on the: Barometr firm rodzinnych, 2015b, p. 6

In Poland in 2015 there was an increase in the number of companies which maintained their level of employment. It amounted to 63%. 17% made a decision to increase employment. In 2014 this number was over 30%. Currently, the number of companies which want to employ new workers fell abruptly. When it comes to the decrease in employment the situation does not look optimistically either. In comparison to the previous year there was a higher proportion of Polish family businesses which decreased the number of employed workers by 9 percentage points. In Europe similar trends are also noticeable. An increase in the percentage of the companies which decreased their level of employment was recorded with the simultaneous decrease in the percentage of companies which increased their employment. 34% of Polish family businesses declares that they engage in some foreign activities. Most of them, around 55%, maintained the intensity of their activities in the last 12 months. In Europe the percentage of the companies active on the foreign markets is much higher and equals 58%.

Concluding, Polish family businesses look more cautiously into the future. It could be explained by worse results when it comes to revenues and employment in the previous year. Nevertheless, the figures are still very good. In Europe family businesses look more optimistically into the future and assess their prospects for the next year more positively.

2 Challenges for Polish businesses

Family businesses unceasingly face many challenges and demands. The biggest challenge for Polish family businesses in comparison to 2014 are ever-increasing labour costs. The second significant problem is the growing competition which is, at the same time, the biggest concern for European family businesses - 37% of the interviewees pointed it out. The third barrier for Polish firms is the political instability (31%). The figure went up as compared to 2014. For European family businesses, apart from growing competition, the biggest challenge is finding qualified workforce (33%) and fall in profitability of a business (32%).

Table 3 Problems in functioning in Polish and European family businesses (%)

Criteria Period	Poland			Europe		
	Rising labour costs	Growing competition	Political instability	Growing competition	„The battle for talents”/ finding qualified workforce	Decrease in profitability
December 2014	63	36	26	36	36	47
September 2015	51	35	31	37	33	32

Source: own compilation based on the: Barometr firm rodzinnych, 2015b, p. 9

One more research was conducted among Polish and European family businesses. They were asked to identify changes and improvements, which could favorably influence growth conditions for their businesses. In Poland these factors included: lower tax rate, lower non-wage labour costs and easier tax regulations. In Europe the situation is completely different. Labour markets regulations should be a subject to change and improvement. Decreasing non-wage labours costs (as pointed out by 28% of respondents) and reducing administrative limitations would be beneficial for these companies' prospects of growth.

Table 4 Beneficial growth conditions for family businesses (%)

Poland			Europe		
Lower tax rate	Decreased non-wage labour costs	Easier tax regulations	More flexible labour market regulations	Decreased non-wage labour costs	Reduced administrative limitations
43	43	40	35	28	23

Source: own compilation based on the: Barometr firm rodzinnych, 2015b, p. 11

Success of family businesses, both in Poland and Europe, depends, to a large extent, on the ability to deal with challenges. These enterprises want and expect even bigger changes in the legal systems and in the law that is being passed in each of the countries.

3 Investment plans of family businesses

Family businesses, while planning their future, should take into consideration all strategic changes that need to be undertaken with regard to ownership and management of a firm. The majority of people having their family business usually consider an option to pass on their business to next generation. However, in Europe a new trend has been emerging for 2 years and increasingly more often family businesses are being sold.

In Poland family business owners usually consider and plan to pass on the ownership of a business to next generation. Up to 45% of respondents claim that they are going to make such decision. They also plan to pass on the management of a business (44%) or the control over a business (42%) to next generation. In Europe the situation is slightly different. The highest number of respondents i.e. 26% decided to pass on the management of the company to next generation. The sale of a company (21%) was the second most popular decision. As we can see, more and more businesspeople decide to pass on their company to complete strangers. In Poland this trend is also becoming increasingly more popular (although it is only in fourth place). This approach is declared by 34% of Polish business owners. Apart from that, Polish businessmen plan to appoint as a General Director somebody from outside of the family and only pass on the ownership or control over the company to their family (12% of those surveyed) and then going public (4%).

Table 5 Strategic changes planned by family businesses (%)

Area Criterion	Poland	Europe
Passing on the ownership of a business to next generation	48	20
Passing on the management of a business to next generation	44	26
Passing on the control over a business to next generation	42	15
The sale of a business	34	21
Appointing a General Director from outside of the family, but leaving ownership/control for family	12	14

Source: own compilation based on the: Barometr firm rodzinnych, 2015b, p. 13; European family business barometer. Determined to succeed, 2015, p. 11.

If family businesses want to look into to future and develop their operations, they have to include investment plans in their strategies. Over half of Polish enterprises (53%) plans new investments. As compared to 2014 there is a significant fall (by 17 percentage points). Declining tendency occurred also in Europe (from 86% do 75%). In Poland up to 45% of firms do not plan any investments. In Europe corresponding figure is 14%. Plans regarding the exit from the investments are a different case. In Poland the number is merely 2% (in 2014 the number was 5%) while in Europe the number is bigger and equals 11%.

Table 6 Investment plans of family businesses (%)

Criteria \ Period	Poland		Europe	
	December 2014	September 2015	December 2014	September 2015
Plans investments	70	53	86	75
No investments plans	25	45	25	14
Plans exit from an investment	5	2	5	11

Source: own compilation based on the: Barometr firm rodzinnych, 2015b, p. 15; Barometr firm rodzinnych, 2015a, p. 13

Family businesses plan investments, among others, in internationalization of the firm, core activity and diversification. Polish companies, in large part, focus on investment in core activity. A high number 94% of those interviewed pointed this out. In European companies the corresponding number was 58%.

Table 7 Areas of planned investments (%)

Criterion \ Area	Poland	Europe
Internationalisation of the firm	20	31
Core activity	94	58
Diversification	23	27

Source: own compilation based on the: Barometr firm rodzinnych, 2015b, p. 15

One can state the fact that every strategic plan should include investments. Regardless of the fact that many companies are afraid of risk and have multiple concerns, in order to develop and reap benefits they have to develop constantly. Thanks to this, companies become more competitive both on the domestic and foreign markets.

4 Advantages of family businesses

The main source of comparative advantage of family businesses is their fast and flexible decision making process. This characteristic was pointed out by 70% of Polish family businesses and 71% of European ones. Entrepreneurs also perceive private ownership as an advantage (in Poland 34%, in Europe 31%). Values and patterns of behavior represented by family businesses as well as their long-term perspective are also considered beneficial.

Table 8 Advantages of family businesses (%)

Criterion \ Area	Poland	Europe
Fast and flexible decision making process	70	71
Private ownership	34	31
Values and patterns of behaviour	33	51
Long-term perspective	30	63

Source: own compilation based on the: Barometr firm rodzinnych, 2015b, p. 17

An important issue influencing the future of family business is preparing and properly conducting a generational change. It guarantees durability and success of a family business. 90% of Polish and European family businesses agree with this claim. However, in Poland 60% of respondents admitted that they haven't engaged their descendants to manage their company, in Europe the corresponding number is 44%. When preparing for the future it is equally important for older generation to pass on timeless values and family rules to their successors.

Another fundamental issue considered by owners of companies is hiring people from outside of the family to join the management team. This decision is declared by 3% of those surveyed in Poland. In Europe the number is significantly higher and is equal 76%. Simultaneously 61% of Polish and 85% of European respondents admit that hiring managers from outside of the family may be beneficial for the business. One of the resulting benefits may be the inflow of external experience and knowledge. Moreover it enables the owners to focus on strategic issues thereby increasing the professionalism of the family business.

5 The future of family businesses

For Polish family businesses the most important goal is to increase profitability (53%) and revenues (45%). Subsequent goals included offering new products and services, entering new markets, attracting new talented workers, increasing innovativeness and training employees. In Europe situation is similar when it comes to two main goals namely increasing profitability (59%) and increasing revenues (37%). However, other goals go as follows: entering new markets, increasing innovativeness, offering new products and services, attracting new talented workers and trainings for employees. Increase in innovativeness among Polish companies is much less significant as compared to European standards. The numbers are 16% and 23% respectively. Increasing innovativeness is an important issue as it became one of the main sources of competitive advantage on the market.

Table 9 Priorities for family businesses for upcoming 2 years (%)

Area Criterion	Poland	Europe
Increasing profitability	53	59
Increasing revenues	45	37
Offering new products and services	24	21
Entering new markets	20	23
Attracting new talented workers	19	16
Increasing innovativeness	16	23
Training employees	13	11

Source: own compilation based on the: Barometr firm rodzinnych, 2015b, p. 23

Three the most important issues for Polish family businesses turned out to be: maintaining work-life balance (92%), keeping control over the company in family (91%) and intergenerational communication (88%) whereas European family businesses pointed out: having proper corporate governance structures (85%), preparation and training for successors (82%) and keeping control over the company inside of the family (8%).

Family businesses know what kind of factors influence their future success. Despite that, they still concentrate on their current situation and plans for the future are very rarely discussed. Findings of the research show that in company's strategy essential issues are not taken into consideration which could potentially positively influence their competitiveness.

Conclusion

Investment activity is one of the most important ways to grow and develop a company. It results, to a large extent, from the continuously changing environment of the firm, growing competition and clients' expectations.

Investment activities of family businesses are influenced by many factors and are dependent on many nuances. Research shows that:

- family businesses positively assess their economic standing – both in Poland and in Europe economic situation of this type of businesses is assessed as good or even very good with regard to prospects for the future. In Poland 47% of respondents expressed such opinions and in Europe 75%. Among businesspeople who negatively assess their situation there is an evidently worse result as compared to the previous edition of the survey;
- while conducting their business, family businesses face ever bigger challenges, which they have to face – in Poland main problems for entrepreneurs include rising labour costs, growing competition

and political instability whereas European companies mentioned growing competition, finding qualified workforce and declining profitability;

- decreasingly less family businesses plan investments – as compared to the previous year Polish and European companies, to a lesser extent, plan their investments. In Poland 53% of respondents claimed that they plan investments (in 2014 the number was 70%) whereas in Europe 75% (in 2014 it was 86%). 45% of entrepreneurs in Poland declared no investment plans at all, in Europe the number declined and amounted to 14%;
- family businesses hire management from outside of the family and see a lot of benefits resulting from doing this – they undoubtedly include inflow of external experience and knowledge which leads to increased professionalism of a family business and frees up owners' time to focus on strategic issues;
- family businesses want to increase their profitability and revenues – the main goal for Polish companies is to increase profitability (53%) and increase revenues (45%). In Europe situation looks similar. 59% of the interviewees want to increase their profitability and 37% their revenues. It is distressing that few businesses want to improve their innovativeness (in Poland 16% and in Europe 23%).

For several years in Poland there is a noticeable increase in interest in the phenomenon of family entrepreneurship. Although history of Polish democracy is shorter and much more dramatic than the European countries, the achievements of Polish family businesses are quite impressive. In 2015, we have seen the first visible signs of waning optimism among Polish companies, that focus on maintaining the level of income, employment and foreign investment rather than on generating growth. They are concerned about rising costs, increasing competition and unstable economic situation. Polish organizations expect reforms in the form of: lowering the tax, simplifying the tax system and reduce non-wage labor costs. The implementation of such changes in the country will make family businesses able to develop and operate its investment activities more willingly.

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*REDUCING TECHNOLOGICAL UNEMPLOYMENT BY BROADENING
CAPITAL OWNERSHIP*

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Abstract

Purpose of the article Machines are used in almost every area of human activities. Substituting labour with machines is a step forward, but most people lose their job and thus the dominant source of income. This article has to show, that the technological unemployment is not just a threat, but it can have also a positive effect for the dismissed workers consisting in making them partial owners of the new assets and thus rich people with passive incomes.

Methodology/methods There are used secondary data to analyze the structure of incomes and expenses in czech households. Using the Spearman coefficient of rank correlation there is determined the connection between the gross domestic product per capita and the expenses for different goods and services. Subsequently, there is deduced, which expenses can be postponed and so which amount of money is available to save.

Scientific aim The main aim of this article is to suggest a course of steps to keep the dismissed workers in the form of broadening the ownership structure after automation of production. So there is specified broadening capital ownership as a solution to technological unemployment.

Findings There was found out that most kinds of expenses are firmly correlated with the gross domestic product. So these bought goods and services are not necessary and their consumption can be postponed. But the period, when the employees should save money to invest it, should be longer than ten years.

Conclusions The suggested approach to broaden the ownership structure regards the actual standard of living, which is derived from the goods and services, whose consumption is not very firmly correlated with the gross domestic product. Furthermore, it is applicable for managers to determine, which part of wage should be saved periodically to keep the standard of living into the future.

Keywords: broadening the ownership structure, gross domestic product per capita, standard of living, structure of incomes and expenses, technological unemployment

JEL Classification: D14, G32, M21

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Introduction

There are three basic factors of production. Two of them are primary factors, namely land and labour, and the third one, called capital, is a secondary factor, because it was produced earlier and it is used for further production. In ancient times, land and labour were dominant, because the only source of growth came from agriculture. But during the Middle Ages and especially in modern times the importance of capital increased. And nowadays, almost all human activities can be substituted with machines, so role of capital is even more significant.

All the factors of production are owned by households and are provided to firms. The amount of land is strictly set. But each household disposes of different proportion of both the other factors of production. Most people dispose of almost no capital and they are living just on their wages or salaries. On the contrary, very few people in the world own such amount of capital, that the interest, dividends or other yields on this factor of production are sufficient to cover all their living costs.

Substituting labour with machines, as a consequence of the technological progress and a symbol of economic growth, seems to be a very positive phenomenon, because the people do not have to work so much and they can dedicate to their hobbies because of more free time. But there appears also a negative effect called technological unemployment. So when the labour is substituted with capital, the workers lose their job and thus their dominant income, whilst the incomes of capitalists raise, or can raise.

There can be derived, that such households, whose members work for money, become poorer, as a result of technological progress, whilst households providing capital become, or can become, even richer. But there is the other side of the coin, that the capitalists are dependent on sales, that are flowing from the poor people, who are consumers. So when all labour would be substituted with capital, not just workers but subsequently also the capitalists would lose their income, and so the actual economic system cannot work endlessly.

So the technological unemployment becomes a considerable economic problem, which must be solved somehow. The technological unemployment can be eliminated by implementing various suggestions like banning innovation, basic income or shorter working hours, but the only reasonable solution consists in broadening the ownership of technological assets. The main advantage of this suggestion is reducing both the technological unemployment and differences between poor workers and rich capitalists.

But there is very difficult to implement broadening ownership structure, because the workers do not have much capital to provide it to the firm. So this article should suggest a process to generate the needed amount of capital for the workers and thus to specify this selected solution to technological unemployment.

1 Theoretical background

The technological unemployment is an effect caused by substituting labour with machines by the production. There are six reasons in total for using capital (Ashford, 2015). The capital can:

- 1 replace labour,
- 2 vastly supplement the work of labour,
- 3 do such work that labour cannot do,
- 4 work without labour,
- 5 pay for itself out of its future earnings,
- 6 distribute the approximate income necessary to purchase its output.

The technological unemployment occurs as a result of a technological progress, whose intensity can be measured according to following inputs (Feldmann, 2013):

- 1 Active labour market policies
- 2 Collective bargaining coverage
- 3 Employment protection legislation – regular and temporary contracts
- 4 Foreign direct investment net inflows
- 5 Foreign direct investment net outflows
- 6 Gross domestic product per capita
- 7 Imports
- 8 Inflation rate
- 9 Openness
- 10 Output gap

- 11 Patents
- 12 Product market regulation
- 13 Real effective exchange rate shock
- 14 Real interest rate
- 15 Tax wedge
- 16 Terms of trade shock
- 17 Trade union density
- 18 Unemployment benefits replacement rate
- 19 Unemployment rate
- 20 Wage bargaining centralization and coordination

The first massive substituting labour with machines was implemented in early 19th century during the industrial revolution. Some people, called Luddites were dissatisfied with it and they organized the riots consisting in smashing the machines in textile factories. But the Luddites did not protested just against destruction of jobs. The Ludditism can be interpreted also as a protest of skilled workers to the substitution of semi-skilled and unskilled machine operators and as a threat to the workers' way of living (Standing, 1984).

The technological unemployment seems to be a short-term phenomenon (Hansen, 1931). Its reason is the fact, that substituting labor with machines causes reducing average costs and thus reducing the price of the product. So the customer spend less money for this product and remaining part of their income can be used for buying new goods or services. And these new products can be made by employing the dismissed workers. So the long-term impact of substituting labour with machines is positive not only for the capitalist but also for the whole society. But the customer does not have to use all his income for the consumption. So the positive impact of substituting labour with machines must be assessed on the basis of the consumption and demand behavior (Tubaro, 2008).

Nowadays, machines can do many activities, that were before performed only by people. And it is just a matter of time, when whatever contemporary human activity will be automatized. Even in the oldest profession, namely prostitution, can be occurring technological unemployment as a consequence of producing and using sex robots (Danaher, 2014).

So the technological unemployment can become a big economic problem and there is necessary to eliminate or at least to reduce it. There were proposed many solutions to technological unemployment like protecting employment by slowing innovation, mandating human workers, re-distributing employment with job-sharing, lower mandatory retirement ages, shorter work week, making new work with public employment, tax incentives for employers, public investment in re-education for high skill jobs or a basic income guarantee (Hughes, 2014). A basic income guarantee is the most attractive policy to leave a threat-economy, consisting in fear of starvation, homelessness and death, and reach the situation, when the people might work, because they want to work, not because they must work. (Walker, 2014). On the contrary, shortening work time is not any more suitable proposal because of the greatly expanded opportunities to replace labour by increasingly sophisticated machinery. (Leontief, 1979). Slowing technological innovation can be reached thanks to the fiscal policy, when the minimum wages are very low and the people are taxed only for what they consume rather than for what they earn and own, but practising this proposal tends to an unfair welfare system and worse redistribution of wealth (Floridi, 2014).

There were also proposed three alternative models of service production as a solution to the technological unemployment (Gajewska, 2014). The first one is the spontaneous and generalized exchange model. It consists in generalized reciprocity, which means that paying or offering a countervalue is not a condition for being hosted by others at the given moment. The second model called time bank model enables dismissed workers to provide services before they will need them themselves. And the third model, which is the subsistence cooperatives model, is based on such principles as self management, self-organization, direct democracy and spontaneous reciprocity.

Another proposal to solve the technological unemployment is broadening capital ownership (Freeman, 2015). So the employees become new owners of the technological assets and thus of the company, when they buy stocks of the company or invest in mutual funds. But this solution to technological unemployment is applicable not only for employees, but also for customers or even the general public (Gates, 1999). There are distinguished e.g. employee stock ownership plans, customer stock ownership plans or related enterprise stock ownership plans.

The second effect of broadening capital ownership, besides reducing or eliminating the technological unemployment, consists in generating passive incomes for the dismissed workers. So these people become

financially independent and can retire from paid work (Perrone, Vickers and Jackson, 2015). And making capitalists of employees can be good simulated by playing the board game Cashflow (Fridman, 2010). So the managers can use this game as a tool of a better and more effective financial preparation of the employees, whose activities will be automatized.

So broadening capital ownership seems to be a very suitable solution to technological unemployment. But its limitation is the fact, that most employees do not have enough money to become new owners. And no author proposes any specific process to generate financial sources for them to get shares in the company.

2 Objectives

This article has its main aim to specify broadening capital ownership as an approach to solve the technological unemployment. There is proposed a method of saving a part of wage for the purpose of getting shares of the company.

There is regarded the fact, that some part of consumption is necessary, whilst expenditures for another goods and services can be postponed because of their relative luxuriousness. Furthermore, the proposed specification of broadening capital ownership is suitable not only for previous employees, who become new partial owners, but also for the present capitalists, because they do not lose the sales, collected from consumers.

So the first partial aim is to collect data about individual groups of expenditures of czech households for the periods from 2005 to 2014. Then, there is decided, whether the consumed goods or services are luxurious, necessary or inferior. And subsequently, there are set the planned one-year values for each group of expenditures to the future.

Furthermore, there are set net money incomes and planned expenditures within a ten-year period. So there can be calculated the planned amount of saved money, which can be utilized by financial managers, who can better plan the minimal return on equity to pay dividends to the new partial owners, whose amount is at least the same as the wage, which was received by these new partial owners before, when they were employees.

3 Methodology

There are collected secondary data from the website by the Czech Statistical Office. There is analyzed the structure of expenditures of czech households.

The luxuriousness or necessity of bought goods and services is considered according to the correlation between the gross domestic product and the expenditures for these goods or services. So there is used a modified approach for identifying cyclical, neutral and anti-cyclical sectors (Berman and Pfleeger, 1997). But there is used the Spearman coefficient of rank correlation because of its higher universality compared to the Pearson correlation coefficient. The formula of calculation this modified Spearman coefficient of rank correlation is the following:

$$r = 1 - \frac{6 * \sum_{i=1}^n (C_i - GDP_i)^2}{n * (n^2 - 1)}$$

where:

r = Spearman coefficient of rank correlation

C_i = rank numbers by expenditures for individual items of consumption

GDP_i = rank numbers by the gross domestic product

n = number of researched periods

There is used a weighted chronological mean to determine average expenditures for necessary goods and services within researched periods. It is calculated according to this formula:

$$\bar{x} = \frac{\frac{1}{2}x_1 + x_2 + \dots + x_{n-1} + \frac{1}{2}x_n}{n - 1}$$

where:

\bar{x} = chronological mean of expenditures for necessary goods and services

x_1, x_2, \dots, x_n = expenditures for necessary goods and services in individual researched periods

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n = number of researched periods

There is used minimal value of expenditures, if the goods or services are luxurious. Analogously there is used maximal value of expenditures, if the goods or services are inferior.

4 Results

There were gotten the data about the structure of expenditures of czech households. The kinds of expenditures are classified according to the consumer basket used for the Consumer Price Index calculation. Furthermore, there were found out also the data about net money income and gross domestic product per capita. The data were collected for the years from 2005 to 2014. This ten-year period is equivalent to one medium-term economic cycle, called Juglar cycle, which is caused by investing in fixed assets, that can result in the technological unemployment. All the data are recorded on Table 1:

Table 1 Expenditures, income and gross domestic product per capita in the Czech Republic (in CZK)

Items	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Food and non-alcoholic beverages	18764	19566	20907	22563	22255	22435	22515	23764	24407	24776
Alcoholic beverages and tobacco	2641	2823	3016	3031	3229	3255	3419	3327	3383	3539
Clothing and footwear	5101	5256	5617	5837	5765	5812	5658	5584	5679	5980
Housing, water, electricity, gas and other fuels	18308	20150	20699	22339	24676	25225	26406	26259	26824	26241
Furnishings, household equipment and routine maintenance of the house	6103	6717	7385	7633	7726	7207	7309	6892	6645	6957
Health	1822	1947	2392	3031	3113	3139	3183	3327	3142	3173
Transport	10110	10610	11234	12460	12107	12438	12849	12714	13291	12815
Communication	4190	4672	4889	5276	5304	5347	5305	5228	5196	5126
Recreation and culture	9655	9929	10922	11787	11877	11857	11552	11288	11237	11595
Education	455	487	624	674	692	814	707	832	725	732
Restaurants and hotels	4645	4867	5409	5837	5996	5812	6012	6297	6283	6469
Miscellaneous goods and services	9291	10124	11234	11899	12569	12903	12967	13308	14016	14646
Purchase and reconstruction of the house/dwelling	4760	6463	11674	7253	8241	8843	9445	10422	7409	7809
Other expenditures	3321	3780	4517	4445	5072	4931	4888	5133	5043	5294
Net money income	103991	109059	118027	127956	139733	143118	144597	147456	149737	153269
Gross domestic product	318345	341604	371204	384992	373810	375921	383218	384575	387900	404843

Source: Statistical Yearbooks of the Czech Republic for years 2005-2014

As recorded on Table 1, the most important items within expenditures of the czech households are food and non-alcoholic beverages, housing, water, electricity, gas and other fuels, and transport. On the contrary, expenditures for education or health are not very significant.

But there is needed to analyze the relation between the individual items of expenditures and the gross domestic product per capita to determine the relative necessity, luxuriousness or inferiority of bought goods or services. For this purpose, there is used a Spearman coefficient of rank correlation, where the input quantities are gross domestic product per capita and each of the kinds of expenditures.

The Spearman coefficient of rank correlation can reach values from -1 to +1. This interval can be divided into three thirds because of the existence of inferior, necessary and luxurious goods and services. So the partial intervals for each group of goods or services are the following:

- <-1; -0,3333) for inferior goods and services,
- <-0,3333; +0,3333> for necessary goods and services and
- (+0,3333; +1> for luxurious goods and services.

The value of this coefficient determines just the luxuriousness, necessity or inferiority of dominant goods or services. So each group of expenditures includes some part of goods and service, whose consumption is not dependent on the economic cycle, which signalizes their necessity.

If there dominates the luxurious goods and services within the group of expenditures, then their consumption can be postponed and the household can spend just the minimal value within the next ten-year economic cycle. On the contrary, if most goods or services, within a group of expenditures, are determined as inferior, then there is considered the maximal value within the selected ten-year period. And for the necessary goods or services can be determined the planned value of future consumption as a weighted chronological mean of these values within the selected ten-year period. The calculated values of the Spearman coefficient of rank correlation for all the items of expenditures including the derivation the type of dominant goods or services and the planned value of all the expenditures are recorded on Table 2:

Table 2 Correlation between the gross domestic product and individual items of expenditures

Items of expenditures	Value of the Spearman coefficient of rank correlation	Type of goods or services	Planned one-year expenditures
Food and non-alcoholic beverages	0,9879	Both necessary and luxurious	18764
Alcoholic beverages and tobacco	0,8303	Both necessary and luxurious	2641
Clothing and footwear	0,7212	Both necessary and luxurious	5101
Housing, water, electricity, gas and other fuels	0,7697	Both necessary and luxurious	18308
Furnishings, household equipment and routine maintenance of the house	0,1030	Mostly necessary	7116
Health	0,7333	Both necessary and luxurious	1822
Transport	0,8909	Both necessary and luxurious	10110
Communication	0,3697	Both necessary and luxurious	4190
Recreation and culture	0,4545	Both necessary and luxurious	9655
Education	0,6970	Both necessary and luxurious	455
Restaurants and hotels	0,8788	Both necessary and luxurious	4645
Miscellaneous goods and services	0,8788	Both necessary and luxurious	9291
Purchase and reconstruction of the house/dwelling	0,1515	Mostly necessary	8448
Other expenditures	0,6848	Both necessary and luxurious	3321

Source: own research

4 Discussion

The sum of the net money incomes within the selected period, recorded on Table 1, is 1336943 CZK per capita. And if the households would spend their money according to the plan recorded on Table 2, then the sum of expenditures for ten years would be equal to 1038670 CZK per capita. So one person could save 298273 CZK within a ten-year period. The sum of planned one-year expenditures is 103867, so if a dismissed worker would put 298273 CZK as a capital into the company, then the return on equity must be at least 34,82 % to obtain dividends or other passive income to cover the planned one-year expenditures. In many companies, the return on equity is much lower and furthermore, the financial management of the company does not have to use the whole profit for paying out dividends. So there is evident that employees must save their money for a longer period

than for ten years to get a sufficient share in the company and thus to become quite independent on wage or salary.

This specified solution of the technological unemployment regards the standard of living within the actual economic cycle. It is applicable in the financial planning, as described in the previous paragraph, because the financial managers can determine either the minimal return on equity to pay out dividends in a sufficient amount to the new owners, or the minimal length of saving money for the employees to become new owners. The limitation of the proposal consists in the fact, that during the period, when the employees are preparing financially for the role of new owners, the standard of living as well as prices can change considerably. And there is ignored a fact, that some members of households, like children, students or housewives just spend money and have no incomes.

Conclusion

Substituting labour with machines spends time and effort but simultaneously deprive employees of their only or dominant source of income. So the capitalists grow richer and employees grow poorer. There were proposed several solutions to reduce or even quite eliminate this technological unemployment.

This article has its aim to elaborate the broadening capital ownership, which seems to be the most suitable approach, because it eliminates not just the technological unemployment itself but also the poverty. The most significant limitation of this solution is the fact, that people mostly do not have enough capital to become new owners of the company. That was the impulse to write this article. To fulfil its aim, there is needed to determine goods and product, whose consumption can be postponed into the future, for the purpose of saving capital.

There are collected secondary data about net money income, groups of expenditures and gross domestic product per capita. There is used the Spearman coefficient of rank correlation to consider the luxuriousness, necessity or inferiority of goods or services. There are used weighted chronological means, minimal values and maximal values to determine the planned amounts of expenditures.

The research showed, that there is impossible to save enough money to become new owners within one medium-term economic cycle. This financial preparation of employees for the role of new capitalists should last more then ten years.

The main advantage of this specified approach consists in regarding the standard of living within the actual economic cycle. Furthermore, it can be applicable in financial planning. The limitation is derived from quick changes of the standard of living as well as of prices. There is also ignored the fact, that some members of the households have no own income and so their expenditures must be covered by earners.

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*COMPETING AROUND THE BALTIC SEA: PRICING DIFFERENCES OF
BANKING SERVICES*

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Abstract

Purpose of the article There is no previous research that had studied pricing behaviour of Nordic and Baltic banking units despite the fact that Nordic banks have major market shares in Baltic countries.

Methodology/methods The study is based on the original dataset of price information from 82 banking units operating in Nordic and Baltic countries. Methodologically, the paper is based on simple comparison of relative prices set by the different units. The units are compared by the criteria of belonging to the banking group or to the country.

Scientific aim The aim of this exploratory paper is to start filling the research gap evident from the fact that only few papers exist that study pricing of banking services in international setting in Nordic and Baltic region.

Findings Main findings based on simple comparison of relative prices are that the prices tend to be lower in banking units operating in Baltic countries in contrary to some opinions presented in public discussion. However, the pattern is not absolute and the ranking of prices is sometimes reversed.

Conclusions The topic of the paper belongs to the promising research area and preliminary results suggests that further research. The results seem to suggest that strategic differences exist in pricing of services in banks. Patterns in the pricing remain to be studied further adding to the existing dataset the variables connecting it to the context economic environment.

Keywords: retail, banking, services, pricing, differences, international business, Scandinavia, Baltics.

JEL Classification: G21, L11, M31

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Introduction

The motivation of the paper arises from the fact that pricing of banking services in the Nordic and Baltic region is unexplored until now despite of the tight connection of still very different banking markets.

The pricing behaviour of Scandinavian banks is the question of efficiency of business that sometimes may take extreme forms (Dahlberg, 2015). The claims exist in public discussion (Paas, 2014) that the price level of banks is abnormally high and that the (huge) profits benefiting the Nordic owners of the banks are extracted in expense of local economies. The studies of pricing that could support or deny the claim are almost missing.

The main objective of the paper is to compare price levels of comparable services for private clients of the banking groups in Nordic and Baltic countries. The analysis is focused on the most frequently used services - only the prices that are connected with deposits and payments are object of this study. The countries of operation of the banking units (separate banks, mother and daughter companies, and branches) in this study are: Denmark, Norway, Sweden, Finland, Estonia, Latvia, and Lithuania.

We focus on the possible strategic differences that may become explicit through the price differences inside the banking groups over the countries where the group operates. The banks under study belong mostly to the class of universal retail banks. Consequently, the study area in the paper belongs to the intersection of at least five separate research fields (that are covered here only partly): strategy, international business, retail research, banking; and pricing.

All these research fields have been covered with plethora of publications studying various subtopics that are or may be relevant also to the present topic. Only few publications on the topic of pricing of different banking services of Scandinavian banking (Willeesson, 2009) are available. No publications exist to the knowledge of the authors where the pricing were studied in the international setting Nordic and Baltic banking. In this paper the aim is to carry out exploratory study of pricing of the everyday banking services offered to private clients by the Nordic and Baltic international banking groups.

The firms operating in the international market have to take into account all usual factors that apply to pricing decisions. In addition, they have to take into account influences of production taking place in different countries, the specifics of demand in different selling points and countries, and the possible interdependence of these markets and segments with the aim of maximizing the value of the company. In decision making one has to keep in mind the time horizon of decisions' influence – both the short-term profits and long-term competitiveness should be kept in mind (Daniels et al, 2009). Strategically, three types of pricing decisions must be made in this respect (Ball et al, 2002, p. 565): domestic pricing, foreign national pricing, and international pricing.

Three aspects (Hill, 2009) are most important for the international pricing strategy – possibility of price discrimination in international setting, possibility to use the tools of international strategic pricing including interactive strategies as described in Johnson et al (2011), and regulatory influences on the pricing. In this paper we are exploring only possible patterns of price discrimination based on the data about in-group price differences.

The remainder of the paper consists of four subchapters. In the first the overview of relevant literature is given. In the second of subchapters the data, its collection methods and methodology are described. Third subchapter describes main results that are followed by the discussion of results and limitations. The conclusions subsection gives overview of the main findings in the paper and of conclusions.

1 Literature overview

As the banks of interest in this study belong mostly to the class of universal retail banks, the literature on retail research has results close to the research task in this paper. Because of space restrictions only overview is given here.

According to Grewal and Levy (2007, 2009) the major areas of research in retailing are pricing and promotion research, product and branding research, services research, loyalty research, consumer behaviour research, channels and organizations research, and internet research. Most of these have some relevance also to the topic of present paper and will be taken into account in future research.

The simplest of pricing is founded on understanding that clearly distinguishable products and services exist and as the result of optimizing behaviour of agents the goods are priced based on marginal revenue (demand) and marginal cost (expenditures) rule. This view is governing the field of microeconomics (Mas-Colell et al, 1995). Industrial organisation (Tirole, 1988) takes basically the same view with number of details added and assumptions relaxed.

When moving closer to the reality, the picture becomes more complicated, first because the pricing may take different complex forms and, for example multidimensional (Hooman, 2003) pricing brings additional details into analysis. Frequently the price is not the only cost associated with buying the service. Sometimes the non-price effort (Murphy and Enis, 1986) is considerable part of the cost for the client.

Another complication arises from the characteristics of the products or services. For example the quality may change the perceived service considerably (Curry and Riesz, 1988). An extreme form of quality and product/service change, bundling, may influence the pricing strategy considerably (Guiltinan, 1987; Stremersch and Tellis, 2002).

These complications are treated here as random and the attention is paid to the pricing itself and the differences among banking units in different countries.

The three basic services (deposit accounts, payments, and cards) analysed here differ from each other considerably when pricing decisions are made. First, the simplest and most traditional is the deposit service with its direct demand (bundling may complicate things in some cases).

Second, demand for payment services is mostly derived from other purchased services, not from the payment service itself (Willesson, 2009). Another complication with the payment services is that it is well suitable for bundling (Guiltinan, 1987).

Third complication is connected to the card payments. The market belongs to the two-sided markets (Rochet, and Tirole, 2006) bringing about network effects.

Strategically, the banks may encourage the use of cost efficient services with specific pricing actions (Drake and Llewellyn, 1995). Cost based specifics of pricing is studied by Hannan, Kiser, Prager, and McAndrews (2003) for ATMs and by Guibourg and Segendorff (2007) and van Hove (2004) for card payments.

The Swedish banking and payments pricing is subject of some existing studies (for example (Willesson, 2009 and van Hove 2011) but as for the authors knowledge, the studies on Nordic and Baltic markets taken together are missing.

2 Data and methodology

The original data set of the prices of 82 banks was composed to study pricing of services in Nordic and Baltic countries. Approximately 9% of the total number of financial institutions in these countries are included into the dataset. A subsection of the dataset is used here.

The data were collected from the web-pages of sample banks during the period between January and April. 82 banking units are included into the general dataset, the major selection criterion was the availability of price information. As the general rule, more price information is better available for the banking units in Baltic countries as compared to their Nordic counterparts (Table 1). In some cases, no price information was published.

The prices were recalculated to euros using the euro/currency rate of the time of the taking data from the homepage. Central bank's rates were used if necessary.

The method of simple straightforward comparison of relative in-group prices is used in this exploratory paper. Overview of methodological approaches in retail research can be found in Brown and Dant (2008), Brown and Dant (2009).

Because of missing data on the web-pages of many banks the analysis left into the final dataset of this paper the banking units described in Table 1.

Table 1 Price information available

	Estonia	Latvia	Lithuania	Sweden	Denmark	Finland	Norway
SEB	+	+	+	+			
Swedbank	+	+	+	+	+		+
Danske Bank	+	+	+	+	+	+	+
DNB	+	+	+				+
Nordea	+	+	+	+	+	+	+
Handelsbanken	+			+		+	+

Source: Price dataset composed by the authors.

Pricing of services for private customers by the Nordic-Baltic banking groups

SEB

In Table 2 below the available SEB prices of services with fixed prices are compared as the percentage ratio with group's average price level. The range of these ratios describes differences of prices inside of the group.

First, sharp differences exist for opening the account when the client is the resident of a foreign country. The fee is highest in Estonia and lowest in Lithuania in this case. The fees differ approximately 9 times with the range 201,6%, 6% representing the biggest price difference in this group.

The prices for domestic payment from the bank office have the second highest difference. The fee is highest in Sweden, reflecting most probably the relative costs (both fixed and variable labour costs are highest in Sweden) to run the offices in different countries. The range of the fees for the currency exchange in office have very similar size to those of payments. Again, the fees are highest in Sweden and lowest in Lithuania.

Foreign payments from the SEB bank office have smallest in-group price difference with the range 46.3%. The price is highest in Sweden most frequently (four services), no clear pattern exists in the case of Baltic countries except of the fact that prices tend to be lower compared to Sweden.

Table 2 Pricing of services in SEB group.

Countries	Estonia (%)	Latvia (%)	Lithuania (%)	Sweden (%)	Average	Range (%)
Opening the account, non-resident	228	46	26	-	109,7	201,6
Currency exchange	101	78	34	187	2,6	153,4
Domestic electronic payment	132	125	143	0	0,3	142,6
Domestic payment from bank office	54	76	54	215	3,7	161,7
Foreign electronic payment	65	128	147	60	8,9	86,5
Foreign payment from bank office	69	102	114	115	14,0	46,3
Debit card, monthly fee	95	-	47	158	1,0	83,3
Debit card, currency fee	68	136	85	112	1,5	66,0
Credit card fee	-	127	71	102	20,4	110,5
Credit card, currency fee	-	90	135	74	2,2	67,8
Average	73	91	78	102,3		

Source: authors' calculations.

Table 3. Pricing of services in Swedbank group

Countries	Estonia (%)	Latvia (%)	Lithuania (%)	Sweden (%)	Denmark (%)	Norway (%)	Average	Range (%)
Domestic electronic payment	134	127	145	0	94	-	0,3	144,6
Domestic payment from bank office	49	84	48	-	219	-	3,1	172,0
Foreign electronic payment	56	144	165	-	85	51	7,9	114,1
Foreign payment from bank office	29	116	72	-	121	163	22,1	133,7
Foreign payment, intake	139	34	140	105	81	-	4,1	105,8
Debit card, monthly fee	71	90	43	171	125	-	1,3	127,9
Debit card, currency fee	-	117	-	88	90	100	1,7%	30,0
Credit card fee	-	140	87	174	-	0	12,2	173,6
Average	68	97	87	104	102	78		

Source: authors' calculations, price lists of banks.

Swedbank

Swedbank's in-group pricing information (Table 3) is available for banking units in six countries (the exception is Finland).

The biggest in-group difference has the credit card fee with the range 173.6%. The fee is highest in Sweden, closely followed by Latvia and lowest in Norway. Second biggest difference in price level have the domestic payments from bank office. The price differences for foreign payments are smaller compared to the domestic payments. In both cases the highest fee is in Denmark. Swedbank's prices are most frequently highest in Sweden.

Smallest in-group differences have the fees for currency operations with credit cards and debit cards. It is interesting that the highest fee for these services is in Latvia, 14% over the average for credit cards and 20% over the average for the debit cards. In Sweden and Denmark the fees are 10-15% lower than average in the group.

Danske Bank

The price information for Danske Bank is available for the units in all seven countries. The results for the in-group prices of services with fixed fees are given in the Table 6 below.

Widest range of prices in Danske Bank group has the credit card fee. The highest is fee in Finland (321% of average) and the lowest in Lithuania (46% of average). Clear patterns seem to be missing in this case.

Table 4 Pricing of services in Danske Bank group.

Countries	Estonia (%)	Latvia (%)	Lithuania (%)	Sweden (%)	Denmark (%)	Finland (%)	Norway (%)	Average	Range (%)
Domestic electronic payment	75	55	81	-	53	-	236	0,5	183,6
Domestic payment from bank office	29	43	53	162	162	151	-	3,3	133,1
Foreign electronic payment	72	125	160	59	74	-	110	9,1	100,7
Foreign payment from bank office	57	83	101	100	196	58	105	17,1	138,9
Foreign electronic express payment	86	53	179	92	99	88	104	40,6	125,9
Debit card, monthly fee	79	66	29	-	89	119	218	1,3	189,7
Credit card fee	71	89	46	-	72	321	0	28,0	321,2
Credit card, interest	138	104	104	-	-	43	112	17%	94,9
Average	76	77	94	103	106	130	126		

Source: authors' calculations, price lists of banks.

DNB, Nordea, and Handelsbanken

Because of space constraint, the detailed information will not be presented for the DNB, Nordea and Handelsbanken. Only the main results are referred here.

Private customer's services DNB's in-group price information is available in four countries out of seven where the bank operates. Compared to other banks, the price information about the DNB is not easily available (instead of private customers, DNB seems to be focused on business customers in Sweden where corresponding data are available instead of prices for private clients).

DNB's prices have big variability over the countries, but again Estonia seems to be one with lowest prices.

Nordea's in-group price information is available for all seven countries (different countries having different services available).

The biggest in-group price range in Nordea have domestic electronic payments particularly because there are now fees in Sweden and Finland for these services. Another highly variable price is for domestic payments from bank office where Finland's price is about 2 times higher the average. The lowest is the price for this service in

Estonia. The clear pattern is missing in the case of foreign payments from the bank office where the highest price is in Norway and lowest in Finland. Surprisingly, in general the prices in Nordea tend to be highest in Lithuania.

The in-group differences in Nordea's prices are lowest in the case of credit card interests where the difference of highest and lowest price is only 55%. Lowest is the interest rate in Finland and highest in Latvia.

Handelsbanken's prices are available for banking units in four countries – Estonia, Sweden, Finland, and Norway. Handelsbanken has the biggest diversity in prices of domestic electronic payments, where only the Estonian unit has fee for such service, the service is free in Sweden and Finland. The clear pattern of high and low prices is missing in this bank.

4 Discussion and limitations

The pricing of some everyday banking services (connected to deposits and payments) of six banking groups (SEB, Swedbank, Danske Bank, DNB, Nordea, Handelsbanken) operating in seven countries (Estonia, Latvia, Lithuania, Sweden, Denmark, Finland, and Norway) was analysed in the paper.

As described in Table 5, the price levels do not follow very clear pattern except of absolute price level in Baltic countries being somewhat lower compared to the price level in Nordic countries. Estonia tends to have lowest prices in the class of services in Baltics and Sweden has lowest price level among the Nordic countries.

Table 5 Comparative relative price levels of banking groups in Nordic and Baltic countries

Countries	Estonia (%)	Latvia (%)	Lithuania (%)	Sweden (%)	Denmark (%)	Finland (%)	Norway (%)
SEB	73	91	78	102	-	-	-
Swedbank	68	97	87	104	102	-	78
Danske Bank	76	77	94	103	106	130	126
DNB	37	77	94	-	-	-	163
Nordea	80	91	120	-	118	114	101
Handels-banken	100	-	-	67	-	94	92
Average	72	87	95	91	109	113	112

Source: authors' calculations, price lists of banks.

Nevertheless, the patterns may be very different in the case of specific services. As an example, Table 6 gives the overview of relative price levels in the case of domestic electronic payments, where the distribution of prices is very different compared to the general pattern. Here the relative price level seems to be higher in Estonia and Lithuania, contrary to expectations and general trend. The reason for Danske Bank's difference in pricing remains uncovered in this study. The biggest limitation for the study was unavailability of pricing data (Table 1) on the web-pages of many banks. The problem was generally bigger in Nordic banks. Even if some information was available, the prices for specific services could be missing. For the future research it is important to use information in databases adding more elaborate methods, information about the banking group, business environment, and market structure.

Table 6 Comparative relative price levels of domestic electronic payments

Countries	Estonia (%)	Latvia (%)	Lithuania (%)	Sweden (%)	Denmark (%)	Finland (%)	Norway (%)
SEB	132	125	143	0	-	-	-
Swedbank	134	127	145	0	94	-	-
Danske Bank	75	55	81	-	-	130	236
DNB	114	128	-	-	-	-	-
Nordea	165	138	197	0	-	0	-
Handelsbanken	300	0	0	-	-	-	-

Source: authors' calculations, price lists of banks.

Conclusion

Exploratory descriptive analysis of the prices of banking services of seven banking groups operating in the sample of six countries was carried out in the paper. The results serve as the basis for further expanded analysis based on the same dataset together with data on business environment.

The main pattern discovered was that in contrary to public opinion, the prices of everyday banking services are lower in Baltic countries. However, the pattern was not absolute and sometimes the tendency was reversed. Also, the main patterns of in-group pricing seem to carry strategic character. Missing data and variability of pricing strategies in the case of different services make the patterns unclear and require the use of more complicated methods to uncover them. The dataset needs to be extended further with external environmental variables included so that economic conditions of the operations of banking units could be taken in account.

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*UPGRADING THE LIQUIDITY AND ACTIVITY RATIOS FOR THE
RESIDENTIAL REAL ESTATE DEVELOPMENT BUSINESS*

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Abstract

Purpose of the article The purpose of the present article is to upgrade the financial indicators for the residential real estate development companies within the scopes of the financial statement analysis, namely, to modify and clarify the traditional liquidity and activity ratios and, in certain cases – to offer some new ones.

Methodology/methods The present work is based upon the general methodological approaches, such as: analysis, synthesis, deduction, and induction. When working on the article, we applied the instruments of the economic analysis as well as the methods of the financial statement analysis, namely –ratio analysis. Numerous works of both the georgian and foreign authors have been studied regarding the given topic.

Scientific aim The scientific aim of the paper is to introduce novelties in the field of the financial statements analysis, in particular, to introduce the traditional liquidity and activity ratios in the adjusted and modified form, with taking into consideration the peculiarities of the development business.

Findings As revealed after getting familiarized with the features of the development business and as a result of a practical analysis of the financial statements of the residential real estate development companies, the traditional financial ratios fail to reflect realistically a degree of the liquidity and business activity of the companies. Therefore, their upgrading is required.

Conclusions For an objective assessment the liquidity and activity of the residential real estate development companies, upgrading some financial ratios were deemed to be reasonable. In particular, the traditional Acid-test (Quick) Ratio has been introduced with a modified form. The current ratio and the cash ratio were adjusted; Overbillings turnover ratio was added to the traditional ratios of the activity. The inventory turnover ratio and the total assets turnover ratio were adjusted.

Based upon the analysis of the ratios introduced herein, the liquidity and activity of the development companies were assessed and the relevant conclusions made.

Keywords: Residential real estate company; Analysis; Acid-test ratio, Cash-ratio; Overbillings Turnover;

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Introduction

One of the methods of the financial statement analysis is the Ratio Analysis. Its application is recommended for any type of businesses. The Ratio Analysis serves for making reasonable decisions on the grounds of an objective assessment and correct forecasting of the financial position and results of a company.

The Ratio Analysis is essentially important for the real estate development business where a major part of cash savings of the population move. To this end, it is advisable to assess the real estate development business as a financial institution, where the Ratio Analysis shall be considered as a mandatory indicator for assessment of its financial stability.

A necessity of upgrading the liquidity and the activity ratios for the development business is conditioned by peculiarities of this field. These peculiarities are expressed in the content of the development activity and the long-term construction projects (Lomidze, Chichua, 2014). Notable also grouping the residential real estate development companies into the “Net” and “Mixed” types. A net-development company is involved in the housing development with selling the residential real estate, however, construction works thereof are implemented directly by a hired construction company. In the Net-development companies, revenues are recognized in compliance with the International Accounting Standard (IAS) No.18 - “Revenue” (Mackenzie, Coetsee, Njikizada. 2014). As to the mixed development companies, they conduct the process of construction works as well, in line with the real estate development activity. A general practice is that in the mixed development companies, the residential real estate is sold by their subsidiaries, while the head company is the construction company, which, in recognition of the revenues and profits is guided under IAS 11 - “Construction Contracts”. The items presentation in the financial statements of the net-development companies and the mixed development companies differ more or less, from each other, as well. This is one more factor, which creates a necessity of adjustment of the liquidity and the activity ratios.

Despite the fact that the financial and management problems existing in the residential real estate development business are a subject of review by numerous researchers, economists, and other specialists of this field, no fundamental studies have been still implemented in terms of analysis of and upgrading the financial ratios, in this field. As to the issues of analysis of the financial indicators in general, a large number of works are devoted to them, including: Eugene, Brigham, (2008). Libby, Libby, Short, (2011), Brigham, Houston (2009). Gibson, Charles (2013), Shim (2008), Tang (2013, Peterson (2009), Subramanyam, Wild (2009), Sherement, Ionova (2005), Riybova (2011), Tolpegina (2007), Bakanov, Sherement, Melnik. (2007), Chiladze (2011), Lomidze (2014), DELTACPE LLC (2014), Pamulu, Kajewski, Betts. (2007) and etc.

Two leading companies operating on the Georgian residential real estate development market, were chosen as the objects of the present study: JSC “m2 Real Estate” (<http://m2.ge/>) - the net-development company, and LTD “Axis” (<http://axis.ge/en/>) – the mixed development company. We have studied and analysed in details their financial statements (Consolidated Financial Statements, 2007-2013). “Axis” LTD; Consolidated Financial Statements. (2010-2014). JSC “m2 Real Estate”), on which basis the issues of upgrading the liquidity and activity ratios were developed.

The issues discussed in the present Article, are actual for a managerial staff of the residential real estate development companies, in terms of making correct economic decisions. This work may also be applied by Master and Doctoral Programs students specializing in the fields of economics and business.

1 Assessment of Liquidity of the Residential Real Estate Development Companies

1.1 Liquidity, as one of the indicators of a stable financial position of a company

A concept of liquidity is associated with the analysis and assessment of solvency of a company within a short-term period. The term “Liquidity” takes its origin from the Latin “Liquidus” and means “liquid”, “movable”, “ongoing”. Liquidity of assets, balance, and a company, differs from each other.

Liquidity of assets characterizes a speed of transformation of the assets into the cash. Liquidity of balance refers to a company’s capabilities to repay the liabilities timely through its own assets only, while liquidity of a company means repayment of the liabilities not only through the own resources, but by the attracted ones, as well. (Chechelashvili, 2014).

The analysis of liquidity of the company envisages to group the liquidity of assets in the liquidity descending order and to group the liabilities by terms of repayment thereof. To this end, a special economic literature suggests to classify the assets and the liabilities by the following groups: **A₁ - Highly liquid (absolutely liquid) assets; A₂ – Quickly realized assets; A₃ - Slowly realized assets; A₄ – Hardly realized assets**

Some authors single out also the 5th group of assets, where the bad debts (bad receivables) and the prepaid expenses are included. (Tolpegina, 2007).

As to the liabilities, they are grouped by terms of repayment as follows: **L₁ – The most urgent liabilities; L₂ – Short-term liabilities; L₃ – Long-term liabilities; L₄ – Constant (stable) liabilities.** The same author introduces in her work the 5th group of liabilities where the future revenues i.e. the unearned revenues are included. (Tolpegina, 2007).

For assessing the liquidity of balance, the relevant clauses of the assets and the liabilities confront each other. The balance is deemed absolutely liquid if the following correlations are preserved:

$$A_1 \geq L_1; A_2 \geq L_2; A_3 \geq L_3; A_4 \leq L_4;$$

Ratio Analysis is one of the methods of assessment of a company's liquidity. Ratio analysis is the basic instrument expressed as a rule in percents or proportions, depending upon how it can be interpreted better.

For assessing the liquidity of the companies involved in the residential real estate development business, we consider it advisable to analyze the ratios listed below, however, they need to be adjusted and, in some cases – modified, too.

1. Current Ratio;
2. Acid-test (Quick) Ratio;
3. Cash Ratio;
4. Current Assets to Total Assets Ratio;
5. Cash to Working Capital Ratio.

1.2 Upgrading the Liquidity Ratios

1. The Current Ratio assesses a general degree of liquidity of a company, which is expressed in the company's capability of repayment of the short-term liabilities through its working capital and, is calculated by the following formula:

$$\text{Current Ratio} = \frac{\text{current assets}}{\text{short - term liabilities}} \quad (1)$$

A special literature indicates that the ratio of general liquidity of a construction development company should not exceed 1.3. (Tang, 2013).

While looking through in details the financial statements of one of the object of our study, namely - JSC "m² Real Estate", we revealed that the company classifies its merchandise inventory by current and long-term items. The merchandise inventory by its nature is subject to realization within 12-month term after composing the financial statement and, as a rule, is the current asset. However, proceeding from the peculiarities of the real estate development business (we mean a long-term process of the construction works), the merchandise inventory (residential apartments) cannot be realized on an annual basis.

In the net-development company, where the revenues are recognized in compliance with the International Accounting Standard (IAS) No.18 ("Revenue"), classification of the merchandise inventory is in coherence and conformity with the approach of recognition of the revenues. For better understanding of the issue, we'd like to explain that in the net-development company, the revenues are recognized after the house building process will have been completed and the building - put into operation, i.e. transferred to the buyer. As a rule, the construction works last for more than 1-year period or for several years, to say exactly. Therefore, the merchandise inventory, a realization of which is not planned during the next 12-month period, is classified as the long-term asset as at the end of a reporting period. The same approach is applied to the sums transferred by the clients in advance, for purchasing the real estate, which is a liability, namely – the unearned revenue, for the residential real estate development company. Taking into account the aforementioned peculiarities, we consider it advisable to adjust for the net-development companies the Current Ratio and, introduce the same by the following formula:

$$\text{Current Ratio} = \frac{\text{current assets} + \text{long - term inventory}}{\text{short - term liabilities} + \text{long - term unearned revenues}} \quad (1a)$$

2. The Acid-test (Quick) Ratio characterizes the capabilities of a company to cover the current liabilities through the most liquid assets from its current assets. Traditionally, this ratio is calculated by the formula given below and, its optimal value equals to 1, at least:

$$\text{Acid Test (Quick) Ratio} = \frac{\text{cash} + \text{short - term investments} + \text{net accounts receivables}}{\text{short - term liabilities}} \quad (2)$$

Noteworthy, that the cash received as a result of presale of the apartments, is one of the alternatives of funding in the residential real estate development business, which causes increase of the sums of the unearned revenues in the company. As a matter of fact, the unearned revenue has the highest share in the short-term liabilities. By meaning, a difference between the unearned revenue and other liabilities is that repayment of the unearned revenue does not require outflow of the cash from the company and correspondingly, reduces the quick liquidity indicator. Taking into account the above stated, we consider it appropriate to modify this traditional ratio and introduce it as follows:

$$\text{Acid Test (Quick) Ratio} = \frac{\text{cash + short - term investments + net accounts receivables}}{\text{short - term liabilities - short - term unearned revenues}} \quad (2_a)$$

A logic of this approach is strengthened also by position of scientists towards categorization of liabilities by terms of payment. Namely, in the special literature, where the authors introduce the assets and liabilities by certain groups, the unearned revenues are not included in any group of liabilities (L_1, L_2, L_3, L_4). (Pozhidaeva, 2010). Moreover, some of the authors identify and introduce this kind of liability separately, in L_5 group. (Tolpegina, 2007). The second factor, which, we think strengthens also the above mentioned position, is that when calculating the Acid-test ratio, the merchandise inventory is not included in the current assets, despite the fact that the clients' money is paid in advance for creation of such inventory. Therefore, the numerator and the denominator of this traditional formula, do not accord with each other.

3. Cash Ratio – assesses the capabilities of a company in terms of immediate payment of the short-term liabilities. The optimal value of this indicator is 0,2 and, is traditionally calculated by the following formula:

$$\text{Cash Ratio} = \frac{\text{cash \& cash equivalents + short - term investments}}{\text{short - term liabilities}} \quad (3)$$

The above mentioned ratio is the most reliable indicator for assessment the liquidity of a company, However, its clarification seems to be appropriate, by the following reason: When calculating the Cash Ratio, the unearned revenues should not be envisaged. Besides, in the numerator of the formula, only those short-term Investments should be introduced, which immediate realization at the required moment, is doubtless. The adjusted version of this ratio is formulated as follows:

$$\text{Cash Ratio} = \frac{\text{cash + immediately marketable securities}}{\text{short - term liabilities - unearned revenues}} \quad (3a)$$

4. Current Assets to Total Assets Ratio – characterizes a share of the current assets in the total assets. A value of this ratio is conditioned by the fact that the current assets form their own working assets and contribute to increase of the company's liquidity. An optimal value of this indicator for the construction development companies, as stated in the special literature, varies within 60-80% ranges. (Tang, 2013). This ratio is calculated by the following formula:

$$\text{Current to Total Assets Ratio} = \frac{\text{current assets}}{\text{total assets}} \quad (4)$$

5. Cash to Working Capital Ratio, which in some literature is mentioned as the Own Working Capital Maneuvering Ratio or the Functioning Working Capital Maneuvering Ratio – determines a share of cash in the own working assets. (Chechelashvili, 2014). Generally, this indicator varies from 0 to 1 and, its increase is assessed as a positive event. This ratio is calculated by the following formula:

$$\text{Cash to Working Capital Ratio} = \frac{\text{cash \& cash equivalents}}{\text{working capital}} \quad (5)$$

1.3 Analysis of the Liquidity Ratios

The financial ratios discussed above, were used for assessing the liquidity and short-term solvency of JSC "m² Real Estate" and "Axis" LTD during the period of the analysis

The results of Traditional Ratios (**TR**) and Modified Ratios (**MR**) are generalized in the Tables provided below (see Tables 1, 2)

Table 1. Liquidity Ratios of JSC “m² Real Estate”

Ratios	2010		2011		2012		2013		2014	
	TR	MR	TR	MR	TR	MR	TR	MR	MR	MR
Current Ratio	5.2	6.9	1.3	2.0	7.9	2.2	1.5	1.6	2.0	1.6
Acid-test (Quick) Ratio	3.1	3.1	0.5	1.0	6.0	6.0	0.3	4.6	1.1	7.5
Cash Ratio	0.5	0.5	0.1	0.2	5.5	5.5	0.3	3.8	0.5	3.8
Current Assets to Total Assets Ratio	0.1	0.1	0.2	0.2	0.4	0.4	0.7	0.7	0.8	0.8
Cash to Working Capital Ratio	0.1	0.1	0.4	0.4	0.8	0.8	0.5	0.5	0.5	0.5

Source: Conducted by the author based on the Statement of Financial Position of JSC “m² Real Estate”

As evidenced from the Table 1, JSC “m² Real Estate” is characterized by dynamics of improvement of liquidity. A high indicator of the current ratio in 2010, was conditioned by the factor that, 2010 was the first year of operations and accordingly the company had a few amounts received by customers, what is the liability for business. Analysis of the Acid-test (Quick) Ratio and the Cash Ratio reveals that all the liquid assets, namely – the cash and high liquid securities had a trend of increase in the company, which is also a positive indicator. The dynamics of increase of a share of the current assets in the total assets indicates that the company under the study, makes accent on mobilization of the liquid funds. This is a characterizing feature of a net-development company, which carries out the housing business through using the attracted resources. As to the Own Working Capital Maneuvering Ratio, it is stable and meets the norms envisaged under the international practice, i.e. varies from 0 to 1. Stabilization of these indicators were observed within 2013-2014, while the year 2014 was the best in the period of analysis.

A different situation is fixed in case of LTD “Axis” (see Table 2). Namely, despite the satisfactory dynamics of the liquidity ratios in general, the Cash Ratio is very low, which underlines serious problems of the company in terms of solvency.

Table 2. Liquidity Ratios of LTD “Axis”

Ratios	2007		2008		2009		2010		2011		2012		2013	
	TR	MR	TR	MR	TR	MR	TR	MR	TR	MR	TR	MR	TR	MR
Current Ratio	1.4	1.4	1.4	1.4	1.8	1.8	1.7	1.7	1.7	1.7	1.2	1.2	1.3	1.3
Acid-test (Quick) Ratio	2.9	0.3	1.3	0.2	1.3	0.6	1.5	0.1	1.1	0.1	0.4	1.3	0.6	1.5
Cash Ratio	0.07	0.22	0.00 4	0.03	0.04 2	0.13	0.04 2	0.06	0.04 2	0.06	0.00 6	0.02	0.01 9	0.05
Current Assets to Total Assets Ratio	0.82	0.82	0.80	0.80	0.75	0.75	0.85	0.85	0.82	0.82	0.76	0.76	0.77	0.77
Cash to Working Capital Ratio	0.04 3	0.04 3	0.00 4	0.00 4	0.01 8	0.01 8	0.02 4	0.02 4	0.03 1	0.03 1	0.02 6	0.02 6	0.05 6	0.05 6

Source: Conducted by the author based on the Statement of Financial Position of LTD “Axis”

As to the Acid-test (Quick) Ratio, its average value during 2007-2011 was 0.26, which indicates that LTD “Axis” owned the quick liquid current assets equal to 26 US cents for covering each 1.0 USD of its short-term liabilities. A considerable improvement of this indicator was observed during 2012-2013, which was conditions by the increased Accounts receivables.

Noteworthy that the accounts receivables, which were included in calculation of the Acid-test (Quick) Ratio, were introduced in the balance by their total value, not by the net value (with subtracting the allowance for doubtful accounts).

Thus, for assessing the short-term solvency of LTD "Axis", the Acid-test (Quick) Ratio may be considered as less reliable indicator. So, we'd better to rely upon the dynamics of the Cash Ratio. The above table reveals also that a share of the current assets in the total assets has a decreasing trend, which is a negative factor by view of liquidity. Moreover, the Functioning Working Capital Maneuvering Indicator is also low, which indicates on a serious cash deficit in the Company.

2 Assessment of Activity of the Residential Real Estate Development Companies

2.1 Upgrading the Activity Ratios

In the housing development business, a concept of "Activity" is associated with the issue of corporative responsibility of a company, which is expressed in a timely delivery of the apartments to their buyers. To this end, we think it advisable to analyze the following ratios of the activity:

6. Overbillings Turnover

Overbillings (unearned revenues) have a significantly higher share in the liabilities of a residential real estate development company. This is natural for a business where a customer pays in advance a price of the real estate. Reduction of the unearned revenues takes place in parallel to recognition of revenues, which, in its part, is associated with completion of the construction works of the real estate and delivery of the apartments their owners. It should be noted that the given ratio is not considered among the traditional activity ratios, however, application thereof seems reasonable in the field of real estate development business. This ratio is calculated by the following formula:

$$\text{Overbillings Turnover Ratio} = \frac{\text{revenues}}{\text{average unearned revenues}} \quad (6)$$

In the case if the net-development company classifies the unearned revenues in the short-term and long-term items, then in calculation of this ratio both the short-term and long-term items of the unearned revenues should be included.

7. Inventory Turnover

This ratio defines a frequency of the inventory turn, i.e., frequency of realization of the inventory during the given period. This ratio needs to be adjusted in case of a net-development company, in which the merchandise inventory is introduced either short-term or long-term asset. A logic of such approach is the following. When assessing the inventory turnover of JSC "m² Real Estate", the result calculated under the traditional formula, turned out to be irrelevant with a reality, while the result calculated by the adjusted formula, is logical and corresponds to the paces of activity of the Company. The adjusted ratio is formulated as follows:

$$\text{Inventory Turnover Ratio} = \frac{\text{cost of goods sold (cost of sales)}}{\text{average total inventory (short - term + long - term)}} \quad (7)$$

8. Total Assets Turnover

This ratio assesses a velocity of turnover of the advanced value in the total assets, i.e. the pace of use thereof, which has a directly proportional correlation with increase of the revenues and correspondingly, with the profit. Noteworthy that the dynamics of the activity ratios has an impact on a profitability of a company in the operational part. By this reason, we think it appropriate, in calculation of this ratio, to exclude from the total assets those items, which do not participate in formation of the operational revenues, namely – the short-term and the long-term investments, i.e. the purchased securities. In such the case, the ratio will be formulated as follows:

$$\text{Total Assets Turnover Ratio} = \frac{\text{sales revenue}}{\text{average (total assets - investments)}} \quad (8)$$

otherwise, the sales revenues should be added the revenues earned as the interests and dividends

Among the other indicators of the activity, we would like to indicate the Accounts Receivables Turnover Ratio (Underbilling Turnover) and the Accounts Payable Turnover Ratio, which application is especially efficient for the mixed development companies. As we have already mentioned above, the mixed developers implement themselves the construction works, therefore, they have creditors (and correspondingly, have the trade liabilities) – suppliers of the building materials and construction inventory. The works completed at certain stages, are periodically delivered to the clients, as a result, the accounts receivables are created. The dynamics of both these ratios are assessed positively.

2.2 Activity Ratios Analysis

Activities of JSC “m² Real Estate” and LTD “Axis” have been analyzed by use of the financial ratios discussed above. The results are generalized in the Tables given below (see Tables 3, 4).

Table 3. Activity Ratios of JSC “m² Real Estate”

Ratios	2010	2011	2012	2013	2014
Overbillings Turnover	-	-	0.88	0.23	0.94
Inventory Turnover	-	-	0.42	0.12	0.80
Total Assets Turnover	0.06	0.03	0.17	0.09	0.46

Source: Conducted by the author based on Financial Statements of JSC “m² Real Estate

The Table 3 demonstrates clearly that the results of activity ratios of JSC “m² Real Estate” differ from the traditional results, which may be explained by features of the net-development activity. Namely, in conditions of a long-term operational cycle of the residential real estate development business (more than 1 year), almost all ratios of turnovers are fixed lower than 1. Therefore, approach of these ratios to 1, should be considered as a positive factor.

In this view, the best results were fixed in 2012 and 2014, which was conditioned by completion of the housing projects and recognition of revenues in a large quantity. Comparably low ratios in the year 2013, do not indicate on a low-rate activity of the company. They are caused by fact that none of the housing projects were completed and put into operation during 2013, which is a precondition for recognition of revenues and write off the prime cost of the goods sold.

Thus, in order to assess the activity of the net-development companies in the housing business, reliance on the financial ratios only, cannot be considered advisable. So, we may state freely that the financial ratios are certainly limited, by view of analysis.

The Activity Ratios of LTD “Axis” are generalized below (see table 4).

The Table 4 demonstrates that during 2008-2013, none of the turnover ratios were improved in comparison with the analogical indicators of the basic 2007 year, with exception of the Inventory Turnover Ratio, which increased considerably in 2013 and reached 5.55. We suppose it was conditioned by completion of the overdue construction works.

Table 4. Activity Ratios of LTD “Axis

Ratios	2007	2008	2009	2010	2011	2012	2013
Overbillings Turnover	1.01	0.70	0.33	0.52	0.62	0.43	0.49
Inventory Turnover	0.88	0.51	0.17	0.24	0.20	0.46	5.55
Total Assets Turnover	0.52	0.36	0.15	0.19	0.21	0.17	0.19
Accounts receivables(Underbillings) Turnover	1.22	0.98	0.82	1.22	0.79	0.34	0.53
Accounts payable Turnover	5.82	4.52	1.75	1.98	1.45	0.82	0.83

Source: Conducted by the author based on Financial Statements of “Axis” LTD

Notably that, unlike JSC “m² Real Estate”, in case of LTD “Axis” the financial ratios of activity are not characterized by limitation, because LTD “Axis” recognises the revenues and expenditures on a yearly basis. Therefore, it would be appropriate for the mixed development company to rely upon the marks recommended by the international practice when analyzing the activity ratios and, apply them as the standard for comparison.

Conclusion

When working on the present article, we studied in details the features of the development business. In the process of analyzing the financial statements of the leading development companies a need of upgrading the liquidity and activity ratios thereof was established. With taking into account the above stated, we propose to

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adjust and modify the traditional ratios and provide specific ways of calculation of some new ratios, namely: for the purposes of upgrading the liquidity and activity ratios, our proposals cover the following:

To modify the Acid-test (Quick) Ratio and formulate it as follows:

$$\text{Acid Test (Quick) Ratio} = \frac{\text{cash} + \text{short-term investments} + \text{net accounts receivables}}{\text{short-term liabilities} + \text{unearned revenues}} \quad (1)$$

To adjust the Cash Ratio, which implies its formulation in the following manner:

$$\text{Cash Ratio} = \frac{\text{cash} + \text{immediately marketable securities}}{\text{short-term liabilities} + \text{unearned revenues}} \quad (2)$$

Taking into consideration the specificity of the net-development business to adjust the Current Ratio and, formulate it as follows:

$$\text{Current Ratio} = \frac{\text{current assets} + \text{long-term inventory}}{\text{short-term liabilities} + \text{long-term unearned revenues}} \quad (3)$$

To consider the Overbillings Turnover Ratio together with the activity ratio, with the following formulation:

$$\text{Overbillings Turnover Ratio} = \frac{\text{revenues}}{\text{average unearned revenues}} \quad (4)$$

For the mixed development companies, to accept as a positive result approach of this ratio to 1, if needed, to foresee in this formula both the short-term and long-term items of the unearned revenues;

To adjust the Inventory Turnover Ratio for a case where the net-development company classifies the inventory in the current and long-term items:

$$\text{Inventory Turnover Ratio} = \frac{\text{cost of goods sold (cost of sales)}}{\text{average total inventory (short-term + long-term)}} \quad (5)$$

To adjust the Total Assets Turnover Ratio, which implies making correction in the denominator of the Formula and introduction thereof as follows:

$$\text{Total Assets Turnover Ratio} = \frac{\text{sales revenue}}{\text{average (total assets - investments)}} \quad (6)$$

Based upon the analysis of the ratios introduced above, we assessed the liquidity and activity of the companies under the study and, revealed that during 2010-2014, JSC "m² Real Estate" had a tendency of improvement of the liquidity. As evidenced from the analysis of the Acid-test (Quick) Ratio and the Cash Ratio, certain rise of the cash resources' took place in the Company, in line with increase of share of current assets to the total assets, which indicates that the company makes accent on mobilization of the liquid funds. During the period of this study, the years 2012 and 2014 were important, when 2 major residential blocks were completed and put into operation. Here a visual pace of the housing process should also be taken into account. A fact that a low-rate activity was fixed in 2013, does not indicate on a flaccidity of the Company, since this situation was caused by features of recognition of the revenues by the net-development company

Assessment of the liquidity of LTD "Axis" shows that the company is facing with a serious problem in terms of the cash resources. Despite the satisfactory dynamics of the liquidity ratios in general, the Cash Ratio is very low, while increase of the Acid-test (Quick) Ratio is conditioned by the increased accounts receivables.

Notable that the accounts receivable in the financial statements are introduced with total value, not with a net value, that, in its turn, limits a degree of reliability of the Acid-test (Quick) Ratio. Dynamics of the activity ratios indicate that for the company the year 2007 was the best in the period of study. The Inventory Turnover Ratio is an exception, which increased considerably in 2013. We suppose that this factor was conditioned by completion of overdue construction works.

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*TEAMWORK MEASURES AND ORGANIZATIONAL PERFORMANCE: SOME
EMPIRICAL OBSERVATIONS*

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Abstract

Purpose of the article There has been many studies focus on the effectiveness of teamwork, the factors determining it and the impact on the results of the organization. However the variability of the nature of team caused new challenges in this field. The purpose of the article is a review of existing indicators of teamwork effectiveness and to determine the used of the teamwork measures and to test if these indicators are correlated with the applied assessment of organizational performance.

Methodology/methods The study was conducted using a paper and pencil questionnaire. The final sample consisted of 161 Polish companies from the public and private sectors. The survey was conducted in 2014. Senior executives were approached to respond to a survey.

Scientific aim The main aim is to carry out an evaluation in terms of use the teamwork measures in the practice of the enterprises and to determine the relation between the dimensions of team effectiveness: member behavior, team attitudes, team productivity and organizational performance like output measures and competitiveness.

Findings The research results indicate the use of teamwork measures and the existence of relations between the dimensions of measuring teamwork effectiveness. In addition, the relations between the measurement of the dimensions and the measurement of organizational results are also significant, but analysis does not indicate any links between the used indicators of team effectiveness and the measures of competitive position.

Conclusions The research results indicate the direction of improving the existing indicators for team measurement, which should not be unnecessarily extended with many measures, but should focus on the most important indicators for the organization like output measures. Further studies should take into consideration the process approach to determine the relations between measuring the team effectiveness and the competitiveness.

Keywords: team effectiveness, organizational performance, teamwork measures.

JEL Classification: M12, M5

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Introduction

From the 90s interest in the theme of teamwork has been reflected in numerous studies and scientific publications. It is associated with an increase in the importance of team in an organization, resulting from the new challenges of competitiveness and the needs of the organization in terms of flexibility and adaptability. It is believed that the team plays a key role in the success of organization in a global, changeable and client-oriented economy (Mathieu et al., 2006). It may contribute to the effectiveness of an organization or cause problems and limit opportunities for success. However, for the proper management of team it is necessary not only to govern it effectively, but also to measure it, because you cannot manage what you cannot measure. Therefore, all sorts of ways - methods, tools and indicators - become important to measure and assess the efficiency and effectiveness of teamwork management. Teamwork management is traditionally considered to be effective when it allows to increase the organizational performance and to increase its adaptability vital for the survival and development of the organization and if it leads to gain the organizational objectives. The use of suitable, precisely targeted indicators help to shape the approach towards the management of team. Nowadays employees are treated as a valuable capital, not a resource. The main purpose of employees management is to use various kinds of measures to prove that better personal strategies and processes allow getting better results (Baron & Armstrong, 2008, p. 35).

Although there has been many studies carried out in this area, the variability of the nature of team caused by the metamorphosis of the environment in which it must operate in today's organizations raises new challenges in the field of team management theory and practice (Tannenbaum et al., 2012). One of the pressing challenges in this field is measurement of team effectiveness and defining its reflections in the results of the organization to prove that better strategies and team management processes enable organizations to achieve better results. However, the relationship between team management and its efficiency as well as between team effectiveness and results of the organization are extremely difficult to explain. Assessment of actions undertaken to team management is not easy and poses many methodological and practical difficulties, because both quantitative and qualitative measures are used. It should be emphasized that certain complications arise in the measurement from the definition of this term itself. Firstly, the concept is heterogeneous and includes many elements of team: skills, knowledge, competence, experience, motivation which are also difficult to measure. People are variable, diverse and extremely far from accounting concepts of assets (Mayo, 2001, p. 41).

Thus, the purposes of this study is:

- to determine the used indicators for measuring teamwork effectiveness in practice of the enterprises,
- to test if the methods used for measuring the team effectiveness (such as member behaviour, team attitudes, team productivity) are correlated with the applied assessment of organizational performance (like customer satisfaction, innovativeness, market share or sales volume).

1 Dimensions of teamwork measures

Many studies conducted so far have focused on understanding the effectiveness of teamwork, the factors determining it and the impact on the results of the organization. Researched were the relationships between team efficiency and the attitudes and behavior of its members, such as satisfaction (Doolen et al., 2003; Tata & Prasad, 2004; De Dreu & Weingart, 2003), organizational engagement (Stewart & Barrick, 2000), trust (Lin et al., 2010; DeOrtentiis et al., 2013), interdependence in the team (Beersma et al., 2003), sharing the knowledge and learning (Edmondson et al., 2001; Zellmer-Bruhn & Gibson, 2006; Chen et al., 2011). The relations between team effectiveness and the results of organization were also studied (Dyer & Reeves, 1995; Robbins et al., 2001; Thompson, 2004; Kirkman et al., 2001). Many studies have also focused only on defining the effects of teamwork which resulted in existence of several approaches in this regard. The most widely used classification, which the current research are based on, was proposed by Cohen & Bailey (1997), who defined three areas of teamwork effectiveness:

- performance effectiveness (productivity, efficiency),
- attitudinal outcomes (satisfaction, commitment, trust),
- behavioural outcomes (absenteeism, turnover, safety).

Within each of the area several dimensions and measures can be distinguished (Table 1).

Adams et al. (2002, p. 5) presented this functional relationship symbolically as:

$$\text{Team Effectiveness} = f(\text{Performance, Behaviour, Attitude}) \quad (1)$$

The current studies on teamwork search also for the answer to a question of what makes some teams more efficient than others (Ilgen et al., 2005). And here it is pointed out that the perception of effectiveness of the

team is associated with faith in the skills and abilities of its members, that contribute to the success of the whole team.

Table 1. Dimensions and measures of teamwork effectiveness

Performance	Attitudinal outcomes	Behavioural outcomes
Productivity (Cohen et al., 1997; Gibson et al., 2003; Tata & Prasad, 2004)	Employee satisfaction (Doolen et al., 2003; Tata & Prasad, 2004)	Turnover (O'Reilly et al., 1989)
Production (Drach-Zahavy & Somech, 2002)	Commitment to the organization (Cohen et al., 1997)	Accidents and security (Cohen & Ledford, 1994)
Quality (Doolen et al., 2003; Gibson et al., 2003)	Trust (DeOrtentiis et al., 2013)	Absenteeism (Cohen & Ledford, 1994)
Costs (Cohen et al., 1997)	Motivations (Marks et al., 2001)	
Service or customer satisfaction (Gibson et al., 2003; Mathieu et al., 2006; Tata & Prasad, 2004)		
Overall performance (Doolen et al., 2003; Pagell & Lepine, 2002; Pearce et al., 2002)		
Service profitability (Jong et al., 2005)		
Return on capital (Bunderson & Sutcliffe, 2002;		

Source: own work based on (Piña, Martínez & Martínez, 2007)

A large number of studies and proposals in this regard highlights the importance of measuring the teamwork and the need to define the parameters of its efficiency. One of the fundamental problems in this area is to identify and distinguish the factors determining the efficiency of teamwork from the criteria for its effectiveness. The measurement of teamwork is not easy and causes many methodological and practical difficulties as it uses different kinds of indicators - both quantitative and qualitative. This may cause reluctance to use so complex indicators of human resources assessment (Skąpska & Samul, 2015). In addition, the above considerations do not take into account the differences in the teams, such as the nature of tasks or the required skills (see Dunphy & Bryant, 1996), which also influence the selection of parameters to assess the effects of group work (Cohen & Bailey, 1997).

Despite the extensive methodology in this regard the relations between specific indicators and company results are not fully proven (Marr & Schiuma, 2003) and indicate that managing the employees rather indirectly affects the results of the organization (Guest 2011; Paauwe 2009). The authors Wall and Wood (2005) made a critical analysis of the 25 most cited articles in prestigious journals and found that the relationship between people management practices and organizational results are based on improperly designed studies and methodological limitations, and that the conclusions drawn are too optimistic.

2 Research method and results

Studies regarding the ways of measuring teamwork conducted in 2014, by the means of a survey questionnaire, in 161 Polish companies with different activity profile in both public and private sectors. The respondents were managers of the companies ((i.e., directors, chief executive offers). The task of respondents was to select the indicators used in respect of teamwork and organizational results. The measurement of teamwork took into account three groups of indicators:

- member behaviour (for example: age, skills, training investment),
- team attitudes (for example: engagement, satisfaction, motivation),
- team productivity (for example: added value, operational cost, revenue).

Whereas the measurement of organizational performance took two groups of factors into account:

- output measures (for example: customer served, customer satisfaction, innovativeness).
- competitive position (for example: market share, sales volume, profit growth).

All items were rated on a five-point scale ranging from 1 („strongly disagree”) to 5 („strongly agree”).

The participants were asked about the actual use of these indicators in their company. The purpose was to determine the the most commonly used the above-mentioned indicators based on the statistical data (mean, standard deviation, minimum and maximum value). Table 2 reports the results of factor analysis of teamwork effectiveness and organizational performance dimensions.

Table 2. Measurement of teamwork effectiveness and organizational performance dimensions

Dimensions		Measurement			
		Mean	SD	Min	Max
Team indicators	Member behaviour	3,41	0,92	1	5
	Team attitudes	3,70	1,05	1	5
Organizational performance	Team productivity	3,28	1,13	1	5
	Output measures	4,06	1,0	1	5
	Competitive position	3,44	0,8	1	5

SD – standard deviation, Min – minimum value, Max – maximum value
Source: own work

It is noted that the most managers use the measures of teamwork effectiveness. And this leads to the following conclusion that these managers understand the importance of measuring teamwork. All dimensions of team effectiveness (member behavior, team attitudes and team productivity) are used in a similar degree. These indicators provide an indication of an employee's engagement, satisfaction, skills and organization's profitability. All of these factors are core competencies for organizational teams and significant aspect of performance outcome. Team's competencies create a value added and help an organization to gain a success.

The dimension of the measurement of organizational performance are also used in the practice of the surveyed enterprises. The highest rated dimension is output measures (mean=4.06; SD=1). It means that the managers pay attention to the most essential indicators for the company, which show the quantifiable results of an organization. However, the lowest rate was achieved by team productivity. It can be connected with the need of possess some data to measure such indicators as added value, operational cost or revenue. It can be difficult and to give too little useful information about organizational performance.

Table 3 presents the correlations between the assessed teamwork indicators and the measurement of organizational performance in the studied companies.

Table 3. Correlations between variables in the study (N = 161)

Item measures	(1)	(2)	(3)	(4)	(5)
member behaviour (1)	1				
team attitudes (2)	0,546374	1			
team productivity (3)	0,643589	0,506980	1		
output measures (4)	0,557779	0,621941	0,540183	1	
competitive position (5)	0,100094	-0,01163	0,094556	0,170178	1

p < 0,05, Alfa Cronbacha 0,7670321

Source: own work

The research results indicate the existence of relations between the measurements of individual team performance criteria used in companies, i.e. between the behavior of team members and their attitudes, attitude to work and productivity of the team. In addition, the relations between the measurement of these areas and the measurement of organizational results are also significant. This means that companies which measure and evaluate the behavior, attitudes and productivity of their teams also assess the organizational effects of teamwork, such as customer satisfaction, service level or innovativeness. Whereas the above analysis does not indicate any links between the applied indicators of team effectiveness and the used measures of competitive position evaluation.

Conclusion

On the basis of the conducted literature studies and analysis of the research results some conclusions can be formulated in the area of measuring the effectiveness of team, the indicators used in this field and their correlations with the measurement of organizational performance:

- there is a large variety of approaches to the methods of measuring team effectiveness that take into account different perspectives and propose a number of diverse qualitative and quantitative indicators, which could hamper their use in practice;
- there are mutual relations between the measurement of different criteria of team effectiveness (behavior, attitudes and performance - productivity, output measures), which may mean that there is no need to use all of the indicated measures, but only those that are most relevant for organizations;
- the approach to measuring the team effectiveness and the results in organization is complex, the existence of correlations indicates that companies use various types of indicators together;
- absence of relations between measuring the team effectiveness and evaluation of the competitive position, which may indicate indirect correlations between these categories and the need to focus on the process approach in the search for links between them.

This research investigate the dimension of teamwork measurement and indicate the need for the further research in this area. The carried out analysis determines the directions of the evaluation of the team effectiveness, which should not be unnecessarily extended with all sorts of indicators, but should focus on the parameters most important for the organization like output measures - customer served, customer satisfaction or innovativeness. The research results indicate the direction of improving the existing indicators for team measurement. Generally, the actions concerning team management, as well as their satisfaction and commitment to work, have reflection in true organizational performance. Further studies in the field should take into consideration the process approach to determine the relations between measuring the team effectiveness and evaluation of the competitiveness.

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USING Z-SCORE IN DETECTION OF REVENUE MANIPULATIONS

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Abstract

Purpose of the article is to report the additions to the algorithm of detection of revenue manipulation based on DuPont analysis used for evaluating various parts of Return on Equity and Altman Z-Score used to determine the state of liquidity of the organization under review. In this paper these approaches are combined in order to show that they can be important tools in investigation of potential revenue manipulations based on the publicly available financial statements

Methodology used in this paper combines non-parametric statistical methods allowing to eliminate chance in observations and discriminant analysis, which is commonly used in investigation of two samples, which can be separated based on the known criterion (here the presence of fraud in the examined statements)

Scientific Aim of this paper is to provide the science and the financial experts community with the tool of determining fraud in financial statements and the algorithm of determining if the occurrence of such fraud

Findings By using the algorithms and methods presented here it was possible to separate the fraudulent and perceivable clean samples via the use of discriminant analysis and to prove that the companies which are deemed financially stable based on the Altman analysis provide a better sample for the research of revenue manipulations than the arbitrary sample of companies. It was also possible to establish a fraud criteria and show its usability based on one of the most prolific fraud cases (Enron).

Conclusions This paper presents two most important findings: the criterion of the separation of manipulator vs. non-manipulators and the set of variables used, which would allow repeating this research under any modern GAAP

Keywords: Z-Score, Revenue Manipulation, DuPont Analysis, Earnings management, Financial Fraud

JEL Classification: M31, G33

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Introduction

Earnings management is a phenomenon of altering the amounts of recognized expenses, which in turn causes the changes in the company earnings (Net Income). Bruns and Merchant (1990) determined that a large number of managers do not see such process of altering amounts of recognized expenses as illegal and intend to use it in order to enhance the financial outlook of the company managed by them.

Such position of the managers of the large public corporations is more likely to be connected with their interest to obtain monetary and non-monetary gains from the altered earnings outlook. Beneish (2001) observed that the phenomenon of earnings management is more likely to be observed in the form of altering earnings up (towards earnings increase) rather than down (towards earnings decrease).

Following the described approach, earnings management becomes an attempt to show the organization as more efficiently utilizing its resources and business processes (Fairfield & Yohn, 2001). In the era of public trading the investors into the shares of any organization look for the signs of financial efficiency in the publicly available financial statements, hence relying on these statements as the representation of the actual company performance.

Return on Equity (ROE) is seen by many investors as a viable indicator of the company performance (Aebi, Sabato, & Schmid, 2012; Komnencic & Pokrajčić, 2012). DuPont Analysis offers the decomposition of ROE, which includes operating (net) margin ratio and asset turnover ratio. Jansen, Ramnath, and Yohn (2012) stated that earnings management can be observed when asset turnover and operating margin change in the different direction. This definition of earnings management shows that the process of earnings management is the process of altering the efficiency indicators in the direction, which suits the goals of the management of the organization under review.

Z-Score, introduced by Altman (1968), is a measure of corporate liquidity and proximity of the organization to the state of bankruptcy. As a liquidity measure it can be viewed as directly connected with the corporate earnings. The research on the earnings manipulations shows that the companies with low Z-Scores are more likely to be engaged in manipulations with their financial statements (Lenard & Alam, 2009; Persons, 2011).

The ratio variables used to establish Z-Score have clear connection with the corporate earnings (either net or operational), which allows making a connection between the corporate earnings and the state of the corporate liquidity measured by Z-Score. The discussion started by Dechow and Skinner (2000) offers a view that fraudulent earnings manipulations considered by U.S. SEC5 as a chargeable offence is an extreme case of earnings management.

The research presented in this paper reconciles the views on earnings management and earnings manipulation and attempts to prove the assertion made by Dechow and Skinner (2000) through the use of statistical methods of analysis. This paper represents an attempt to quantify earnings manipulation by using Z-Score in connection with the other metrics developed by the described research. It will be shown that Z-Score based on discriminant analysis is instrumental in defining a so-called 'clean' sample of companies, which do not exhibit the same signs of manipulation with the financial statements, which are found in the sample of companies charged with such manipulations.

The rest of the paper has the following composition. It presents the past research on the subject of earnings manipulations/earnings management followed by the definition of the method of the research and the definition of the samples of companies required to establish research results. The next chapter of this paper presents the obtained results. The paper ends with the conclusions based on the obtained results and outlining of the directions of further research.

1 Past Research

Existing theory of detection of earnings management views earnings management as a manifestation of irregularities in the financial performance of the organization financial statements of which are reviewed. The model created by Jones (1991) is based on the assumption that earnings management manifests itself through the increase in net accruals in the company statements. This approach was further refined by Dechow, Sloan, and Sweeney (1995) and used by a number of researchers recently.

Jansen et al. (2012) combine the approach used by Jones (1991) with their own definition of earnings management based on DuPont Analysis. The authors provide the definition of 'upward' and 'downward'

⁵ U. S. Securities Exchange Commission. See <http://www.sec.gov/> for more information on the organization.

earnings management by comparing the direction of change of asset turnover and operating margin. Pustynick (2011) used similar approach by using the flavors of Z-Score functions based on net margin and revenue turnover in order to detect the earnings manipulations in financial statements of the companies under review.

A number of researchers show that there is a connection between low Z-Score and the engagement of the company having it in the earnings management practices (Ahn & Choi, 2009; Zang, 2012). Yasuda, Okuda, and Konishi (2004) connected low Z-Score with the necessity of the management of the organization to take higher risks, which in turn may result in the engagement in earnings management practices.

Giroux and Cassell (2011) showed that the companies having higher Z-Score values are less likely to take significant investment and trading risks. Some investment brokers and analyst use high Z-Score as an indication of potential better returns (Chanos, 2006; Escalada, 2011). Based on the presented view of Z-Score it becomes possible to suggest that there are two types of companies: with low Z-Score and higher probability to be engaged in earnings management practices and high Z-Score and much lower probability of using earnings management to bolster their financial statements.

Kirkos, Spathis, and Manopoulos (2007) found that higher fluctuations of the operating margin indicate the potential of engagement in financial statement fraud. Researchers use operating margin as an indicator of the level of the financial performance of the organization (Caramanis & Spathis, 2006; Denis & Denis, 1995; Lee & Urrutia, 1996). At the same time, Fairfield and Yohn (2001) use operating margin as an indicator of earnings management. The convergence of the views on the role of operating margin points towards the possible use of this earnings manipulation indicator in quantification of earnings manipulations and earnings management.

The examination of the asset turnover ratio is essential in the modern theory of earnings management detection. All models used in earnings management analysis use asset turnover as one of the independent variables (Dechow et al., 1995; Jansen et al., 2012; Jones, 1991). Myers, Myers, and Skinner (2007) also noted the abnormal values of the asset turnover ratio enjoyed by the firms which were engaged in the earnings management practices.

The examination of the relevant studies shows that there is a coincidental appearance of Z-Score in the studies of earnings management and earnings manipulations on the qualitative level. Certain gaps exist in the areas of quantification of the severity of earnings management/earnings manipulation and in the tying of this quantification to the research based on the use of Z-Score. The rest of this paper will attempt to address these gaps by providing a set of quantitative measures related to earnings management/earnings manipulations and their connection to the values of Z-Score for the companies in certain stages of financial health provided by Altman (1968).

2 Method and Samples

Fairfield and Yohn (2001) offered a method of evaluating earnings based on asset turnover and operating margin. In this research this method is expanded having in mind the liquidity of the organizations under review, which is measured by Z-Score. This research introduces two new metrics, namely perceived wealth and real liquidity.

Perceived wealth is represented by the following formula:

$$P = \alpha_1 Y_1 + \alpha_2 Y_2, \text{ where} \quad (1a)$$

$$Y_1 = \frac{\text{Shareholders Equity}}{\text{Total Assets}}, Y_2 = \frac{\text{Revenue}}{\text{Total Assets}}$$

In the presented formula Y_i variables represent equity multiplier and asset turnover respectively. The coefficients α_i are the coefficients of the linear function, which will be constructed in Section 4 as a result of discriminant analysis. Lewellen and Huntsman (1970) showed that revenue is a reliable indicator of the perceived corporate wealth. Several researchers use shareholders equity as an indicator of perceived performance of the organization under review (Branch & Gale, 1983; Crawford, Franz, & Lobo, 2005)

Real liquidity value is presented by the following formula:

$$R = \beta_1 X_1 + \beta_2 X_2, \text{ where} \quad (1b)$$

$$X_1 = \frac{\text{Working Capital}}{\text{Total Assets}}, X_2 = \frac{\text{Operating Income}}{\text{Total Assets}}$$

In the presented formula for real liquidity X_i variables represent working capital to assets and operating margin ratios respectively. Similar to coefficients α_i coefficients β_i belong to the linear function, defined as a result of discriminant analysis. The first ratio based on working capital is used according to Chung, Elder, and

Kim (2010) as a measure of corporate asset tangibility. Operating Margin is used as a measure of corporate liquidity in several studies (Fairfield & Yohn, 2001; Grant & Parker, 2002)

Using approach, previously used by Pustylnick (2011) and supported by the research of Fairfield and Yohn (2001) this research defines two variables, which represent the rate of change of the values of functions R and P:

$$\Delta P = \frac{P_t - P_{t-1}}{|P_{t-1}|} \quad (2a)$$

$$\Delta R = \frac{R_t - R_{t-1}}{|R_{t-1}|} \quad (2b)$$

The difference in the rates of change, represented as $\Delta P - \Delta R$ can be viewed as an indicator change in the corporate financial efficiency. The positive values of this indicator represent the decrease in financial efficiency and the negative values represent the increase in financial efficiency of the organization under review. Based on the definition of upward and downward earnings management used by Jansen et al. (2012) it is possible to formulate the following hypothesis:

H1: The positive values of $\Delta P - \Delta R$ coincide with cases of downward earnings management and the negative values of $\Delta P - \Delta R$ coincide with cases of upward earnings management.

The proof of this hypothesis assists in creating a connection between the techniques, used by Pustylnick (2011) in detecting the signs of earnings manipulation and the techniques used in detecting of earnings management. By accepting hypothesis H1 this study will be able to prove the assertion previously made by Dechow and Skinner (2000) that earnings manipulation is an extreme case of earnings management, which is defined as fraud by U.S. SEC.

The practitioners in the investment field previously used Z-Score in order to establish the viability of investment into specific target companies (Chanos, 2006; Escalada, 2011). Based on the referenced existing findings it is possible to hypothesize that in any arbitrary pool of companies of a significant size one would be able to observe two subgroups defined by the research by Altman (1968), namely:

- a subgroup of companies with Z-Score < 1, which would also have *higher* operating margin fluctuations than the rest of the group and a large number of members exhibiting clear signs of earnings management
- a subgroup of companies with Z-Score > 3, which would also have *lower* operating margin fluctuations than the rest of the group and a small group of members exhibiting signs of earnings management.

By following this logic, it is also possible to suggest that the sub-sample of companies with higher Z-Score represents so-called *clean* sample of companies, which may be considered free from the significant signs of earnings management/earnings manipulations. Therefore, the following hypothesis can be formulated:

H2: The companies with Z-Score > 3 comprise a clean sample, which can be used in any research related to earnings management/earnings manipulation as opposite to the sample of companies engaged in earnings management/earnings manipulations practices.

In order to verify hypothesis H1 this research uses three samples:

The sample of the companies, charged with earnings manipulations by U.S. SEC. The sample of companies, provided by Escalada (2011) as a part of investment advice. All of the companies in the sample have high Z-Score

The large arbitrary sample of the companies, necessary financial data for which was extracted from the XBRL based financial statements submitted in the years 2012-2014. The first two samples are used to create a set of benchmarks, which will be applied to the arbitrary set of companies in order to prove the validity of the defined hypotheses.

Pustylnick (1968) specified the approach which is used in this research to determine if the coincidental appearance of two independent events, specified in hypothesis H1 is or is not due to chance. The method uses counting frequencies of appearance of the event of match of two previously defined criteria for the sample of companies charged with earnings manipulation fraud. If the matching of two criteria is due to chance, then the frequency of such matches must be within the interval defined by the following formula

$$\omega - u_{1-p/2} \sqrt{\frac{\omega(1-\omega)}{n}} \leq p \leq \omega + u_{1-p/2} \sqrt{\frac{\omega(1-\omega)}{n}} \quad (3)$$

where n is the total number of observations, u is a quintile of the normal distribution with the significance of p and ω is the frequency of appearing of the event. Pustylnik (1968) observed that $p = 95\%$ works well for this type of non-parametric analysis. For the analysis connected with this research it is possible to define one the occurrence of one event as given (ex. $\Delta P - \Delta R > 0$) and count the number of changes between occurring and non-occurring of downward earnings management for such cases.

3 Results and Discussion

3.1 Examination of Initial Sample

Pustylnick (2011) established that the indicator based on a principle similar to the one that was used to establish $\Delta P - \Delta R$ can be used to detect the cases of earnings manipulations. In order to use $\Delta P - \Delta R$ for the same purpose it is necessary to perform the discriminant analysis using the variables comprising P and R separately. The analysis was performed with the use of two samples (fraud and clean) which were used in the previous section.

As a result of discriminant analysis the following two linear functions were obtained:

$$R = 0.150 * X1 + 0.924 * X2 \quad (4a)$$

$$P = 0.367 * Y1 + 0.980 * Y2 \quad (4b)$$

Both functions allow separations of 89.5% of results calculated based on the data from the mentioned samples.

Application of non-parametric method described by formula (3) requires comparing the probability of joint occurrence of operating margin and asset turnover with proper signs. In the absolute random case such probability will cover 25% of all existing cases. Calculating boundaries for such cases using formula (3) gives two intervals [42%;59%] for cases of $\Delta P - \Delta R > 0$ coinciding with downward Earnings Management and [45%;65%] for $\Delta P - \Delta R < 0$ coinciding with upward Earnings Management. The probability of 25% is clearly outside of the calculated interval with significance of 95%. Therefore, such coincidence is not due to chance, which would allow to reject the null hypothesis in the case of hypothesis H1.

The application of the same method described by formula (3) to the samples with Z-Score < 1 and Z-Score > 3 must be based on the probability of 50% for $\Delta P - \Delta R$ being either positive or negative. For Z-Score < 1 the computed frequency interval with significance 95% is [54%; 71%], which would place 50% outside of the interval. It means that joint occurrence of $\Delta P - \Delta R > 0$ and Z-Score < 1 cannot be explained by chance. Following similar procedure for $\Delta P - \Delta R < 0$ and Z-Score > 3 the interval with 95% significance is [50%;90%]. The random probability of $\Delta P - \Delta R < 0$ lies at the border of the interval, which does not allow for the definite answer. However, reducing significance to 90% would place the probability of 50% outside of the interval computed by formula (3). This relatively small reduction of significance prompts that joint occurrence of $\Delta P - \Delta R < 0$ and Z-Score > 3 may not be due to chance.

3.2 Examination of Larger Arbitrary Sample

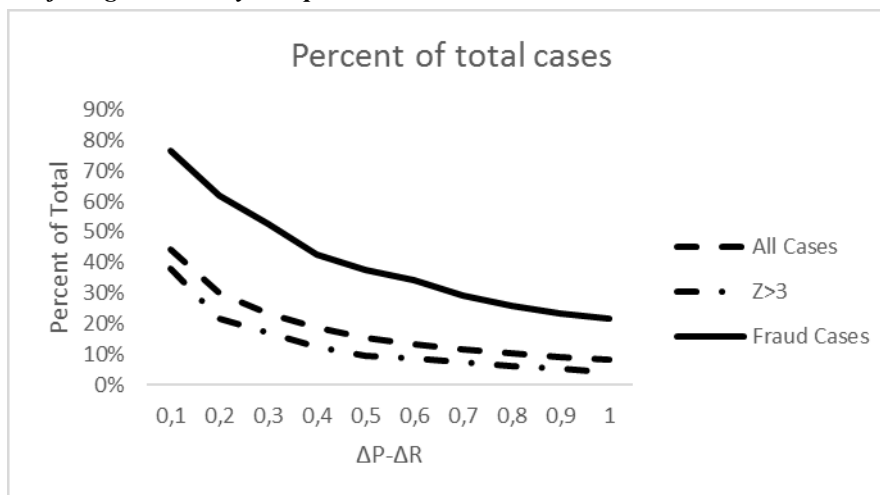


Figure1. Comparison of the numbers of cases of $|\Delta P - \Delta R|$ with the total number of available cases

Figure 1 shows that in the sample of companies charged with revenue manipulations is much higher than in the sample of the companies with $Z > 3$ and the total sample of companies. However, the difference between the latter two samples is rather small, which would prompt for further investigation of these two samples. During the calculation of Z-Score Altman has shown that in the large arbitrary sample Asset Turnover ratio used in the calculation cannot be clearly separated for the two samples used. In the analysis, reported in this paper similar results appeared.

The use of the discriminant analysis applied separately to the values of X1, X2, Y1, Y2 of the fraud sample and two other samples showed that X1, X2, Y1 can be separated for both samples with the Chi-Square significance over 95%. The variable Y2, representing Asset Turnover can be clearly separated in the case of Z-Score > 3 and cannot be separated with any significance when discriminant analysis was applied to fraud sample and the full sample of data. This follows the same pattern, which was earlier discovered by Altman that there is no separation of Asset Turnover values between the sample of companies with poor liquidity and arbitrary sample of companies.

Further examination of the cases of $\Delta P - \Delta R$ for the full sample of companies and the sample of companies with Z-Score > 3 shows the results compiled in Table 1.

Table 1. Dynamics of separation of $\Delta P - \Delta R$ for fraud sample with other two samples

	All Cases				Cases with $Z > 3$			
	Lambda	E-value	Chi-2	Sign %	Lambda	E-value	Chi-2	Sign %
$\Delta P - \Delta R > 0$	0.007	0.993	1.69	0.194	0.007	0.993	1.61	0.205
$\Delta P - \Delta R > 0.1$	0.009	0.991	2.094	0.148	0.01	0.991	2.015	0.156
$\Delta P - \Delta R > 0.2$	0.013	0.987	2.546	0.111	0.013	0.987	2.469	0.116
$\Delta P - \Delta R > 0.3$	0.016	0.984	2.932	0.087	0.016	0.985	2.856	0.091
$\Delta P - \Delta R > 0.4$	0.021	0.98	3.486	0.062	0.021	0.98	3.523	0.061
$\Delta P - \Delta R > 0.5$	0.024	0.976	3.922	0.048	0.024	0.976	3.959	0.047

The dynamics of separation shown in Table 1 appears to prove that with the significance of at least 90% discriminant analysis can separate the absolute values of $\Delta P - \Delta R$ computed for the companies with proven cases of revenue fraud and the cases from the sample of arbitrary selected data. The same analysis of dynamics shows that the companies from the arbitrary sample exhibit the same behavior as the companies. Further comparison of the two samples produced the results compiled in Table 2. In the discussion presented in Section 4.1 the samples had sizes of 120 (fraud) and 36 (clean). For the further analysis the samples of 40 and 70 strong were used.

Table 2. Application of Discriminant Analysis to Sample with Z-Score > 3 and Arbitrary in comparison with Fraud Sample

Sample	Sample with Z-Score > 3					Arbitrary Sample				
	X1	X2	E-value	λ	Cover	Y1	Y2	E-value	λ	Cover
$Z > 3 @ 40$	0.123	0.959	0.343	0.752	84.61%	0.468	0.913	0.248	0.815	77.86%
$Z > 3 @ 70$	0.259	0.916	0.343	0.746	78.76%	0.517	0.896	0.356	0.791	74.67%
All @ 40	-0.193	1.031	0.358	0.741	86.71%	0.721	0.515	0.028	0.973	60.08%
All @ 70	-0.004	1.006	0.345	0.748	82.12%	0.656	0.297	0.027	0.974	56.57%

The comparison of the discriminant analysis applied to the sample with Z-Score > 3 and to the arbitrary sample (both against fraud sample) shows that coverage of the real liquidity is very similar. However, the coverage of the values in the area of perceived wealth is much poorer in the case of arbitrary sample. It can be due to the fact that arbitrary sample may contain a large number of values obtained from the statements of the companies perpetrating or ready to perpetrate revenue manipulations. Therefore, at this point it is possible to

reject the null hypothesis for the hypothesis H2 and state that the sample of companies with Z-Score > 3 suits the research on revenue manipulation better as it provides better separation of samples.

One of the interesting cases of 'litmus test' was examination of the method on one of the most prominent fraud cases of the recent era, namely the case of Enron Corporation, which yielded the values of $\Delta P-\Delta R$ of 0.6, 0.32, 0.37 for the three years of publicly available financial statements. The dynamics of $\Delta P-\Delta R$ separation shows that with significance of at least 90% this data would have been classified as fraud using the presented method.

Conclusion

By observing two types of samples, the ones, pre-selected based on the Z-Score values, and the one, assembled at random, it was possible to see the traits observed in the sample of the companies, charged with earnings manipulations be U.S. SEC reappear in the parts of the arbitrary sample based on the values of Z-Score. This observation leads to the conclusion that the indicator $\Delta P-\Delta R$, which was observed behaving in certain way in the fraud sample, behaves in a very similar fashion in the parts of the arbitrary samples having similar Z-Score values.

Using Z-Score values as criteria for separating parts of the sample it was possible to see that the part of the sample with Z-Score > 3 does not exhibit similar fluctuations of $\Delta P-\Delta R$. This observation correlates with the observation made on the sample of companies, which was designated as a clean sample in section 4 of this paper. It is possible to say that the companies, which have Z-Score > 3, are less likely to have significant changes in financial efficiency.

Although the results of this research do not appear absolutely conclusive, it was possible to perform a discriminant analysis based on two samples, which have distinct separation of Z-Score values and achieve 89.5% segregation of data belonging to them. Applying the same analysis to the arbitrary sample in Section 4.2 it was not possible to find any significant differences to the results from Section 4.1. Based on the discriminant functions, obtained from the discriminant analysis it was possible to analyze the arbitrary sample and segregate the groups which have clear signs of change in financial efficiency, which indicates the potential presence of manipulations with financial statements.

Analysis of the samples mentioned have revealed that the sample of the companies with Z-Score < 1 has members with much higher mean and median values of $\Delta P-\Delta R$ than the sample with Z-Score > 3. Separation of the parts of the sample based on the absolute value of $\Delta P-\Delta R$ of 0.3 allowed segregating three different groups of companies. The outlay samples appear to behave similarly to the sample of companies charged with manipulations with financial statements. The middle sample which contains 80% of all entries behaves very similar to the full sample. It is possible to formulate the following statement as a result of this research:

The companies with values of $|\Delta P-\Delta R| > 0.3$ are more likely to be engaged in the manipulations with financial statements. Such companies are more likely to have Z-Score < 1. The companies with Z-Score > 3 are less likely to exhibit similar behavior and tend to have values of $|\Delta P-\Delta R| < 0.3$.

Although this paper is based on the results obtained from U.S. SEC it clearly does not prohibit using data from any other financial regulator. The number of variables was purposefully reduced. The remaining variables, named X1, X2, Y1 and Y2 in this paper can be computed using GAAP of any country using the modern system of financial accounting.

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*SUCCESS FACTORS OF LOAN AND GUARANTEE FUNDS SUPPORTING
SMEs IN POLAND*

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Abstract

Purpose of the article The aim of the article is to indicate success factors of the activity run by loan funds and guarantee funds on the example of this kind of institutions in Poland.

Methodology/methods The success of loan and guarantee funds was measured by the number and value of loan or guarantees issued. In order to evaluate the results of loan and guarantee funds and to realize the goal, the zero-unitarisation method, T-test, Pearson correlation and one-way between-groups ANOVA analysis were used.

Scientific aim The findings can be important in evaluation of different types of institutions offering SMEs financial instruments and can help to find reasons of success or defeat of programs directed to SMEs.

Findings The analysis showed that loan funds with lower provision achieve better results, however interest rate or scope of the offer turned out to be not important. For guarantee funds the value of the guarantee and number of cooperating banks (the lower number the better results) were the most important for their achievements. The guarantee funds with strong bank partners (usually with shares in the guarantee fund) had better results. Guarantee funds with many cooperating banks had worse achievements. It lets to formulate the thesis, that it is more important to find one cooperating bank than many banks with which the cooperation may be weaker. It may explain the outstanding outcomes of SOCAMA, the network of mutual guarantee funds in France, which cooperates only with group of cooperative banks –les banques populaires.

Conclusions The analysis is conducted for loan and guarantee funds in Poland. In every country different systems of small and medium enterprises' support are organized. Therefore findings in the paper can't be directly generalized for all similar institutions all over the world.

Keywords: small and medium enterprises, loan, guarantee, funds, financing

JEL Classification: M15, M21

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Introduction

Small and medium-sized enterprises are entities that do not exceed two of three values:

- EUR 50 million in revenues from sales of products or/and services and financial income
- EUR 43 million of total assets
- 249 employees

Higher financial risk for creditors connected with financing small and medium-sized enterprises (SME) also stems from the conviction of lower skills of SME managers who do not use in decision-making methods of environment analysis, competition analysis and financial analysis. On the other hand, the legal form of the business, which is usually a partnership of entrepreneurs or a business run by an individual, reduces the risk of investments. Personal responsibility for the liabilities is a reason why entrepreneurs undertake replacement investments or necessary investments to maintain the current position on the market (Waniak-Michalak, 2010).

In many publications, it is noted the problem of difficult access of SMEs to external capital, especially to commercial sources of financing (Biernat & Planutis, 2013). They can't obtain the credit at all or the cost of the credit is much higher than for other companies (Duan et al, 2009; Hans-Joachim, 2003). It should be noticed, however, that several factors influence the assignment to small and medium-sized enterprises' financing higher risk than to other companies. Kasseeah and Thoplan (2012) indicate four factors affecting the ability of firms to gain access to financing: working capital constraint, the external constraint, the size constraint, and the age constraint. Another example might be the risky legal form of an entity (proprietorship), lack of knowledge both about the management of the company (risk for the bank) and the principles of financing and risk associated with using external sources of capital causing an aversion of an entrepreneur to use the credit or loan (Pearlman, 2012), UE decided to diminish level of donations granted to SME for the benefit of financial instruments (credits, loans, venture capital, guarantees). The reason was low efficiency and low leverage effect of grants. Donations were used sometimes in a wrong way and entrepreneurs made wrong decisions just to receive money from UE. They tried often to adjust their need to the scope of projects financed from the UE programs. That's why in the years 2014-2020 financial instruments will have to count at least 70% of UE aid (Waniak-Michalak, 2015).

In Poland financial instruments are distributed by many different not-for-profit organizations running loan funds, guarantee funds and seed funds. Usually these institutions in addition to financial instruments offer training and consultancy. These services are mostly financed from EU funds and the budget of the State. In other countries loans or guarantees are distributed by the governmental agencies or bank institutions. In Poland, shortly after accession of Poland to UE, banks didn't show great interest in participation in distribution of funds to entrepreneurs. It might have resulted from short history of Polish market and high risk connected with difficulties in estimation of life of small and medium companies. The countries where the non-banking guarantee funds are the most developed are France, Finland and Italy. Finland, where FINNERA - the most sophisticated network of loan funds exists, can be an example of a country where loans are very important support of entrepreneurs. Also in Great Britain guarantees and loans are co-financed by government but distributed by private organizations, like Black Country Reinvestment Society⁶, Business Enterprise Fund⁷, Princes Trust, or Let's Do Business (South East) Group Limited with 20 years of experience. Under the program called British Business Bank, since 2009. until 2014, 21 470 loans worth £ 2 192 million secured by government guarantees were granted and the average loan amounted to 102.1 thousand. £.

In Poland loan funds and guarantee funds are co-financed from the UE sources and other programs like Polish-American Fund of Entrepreneurship Development, Polish-Canadian Entrepreneurship Program and World Bank. In other countries different financing mechanisms are taken. For instance in Austria governmental funds are used, but in Canada the risk is shared by government and banks.

The first guarantee fund "Credit Guarantee Fund for Small and Medium-Sized Enterprises "was created by the Polish Bank Gospodarstwa Krajowego (Waniak-Michalak, 2007). There were also guarantee funds funded by private institutions like Bank BZ WBK and Pekao SA Support from private institutions gave these guarantee funds possibility to increase the equity by 66 and 98 million PLN in 10 years, which enabled them to be more active than other guarantee funds.

⁶ <http://bcers.org.uk/loan-process/> access: 15 maj 2015

⁷ <http://www.befund.org/about-us/> access: 15 maj 2015

First loan funds in Poland appeared in the early 90s of XX century. The most active network of loan funds was established by the US Congress which decided in 1989. to set up in Poland Polish-American Enterprise Fund. The task of this fund was to support the creation of market economy in Poland (Waniak-Michalak, 2007).

Nowadays loan and guarantee funds mainly use financing of regional operational programs, funds of Bank Gospodarstwa Krajowego and initiative JEREMIE (Joint European Resources for Micro to Medium Enterprises). The JEREMIE initiative has been launched in the perspective of the 2007-2013 funding. Within this initiative SMEs could use financial instruments like loans and guarantees offered by regional and local loan funds. The amount of aid was limited to 600 thousand PLN for loans, 120 thousand PLN for microloans and guarantees.

The aim of the article is to indicate success factors of the activity run by loan funds and guarantee funds on the example of this kind of institutions in Poland. The success may be measured by the number of loan or guarantees issued. The findings may be important in evaluation of different types institutions offering SMEs financial instruments and help to find reasons of success or defeat of programs directed to SMEs.

1 Guarantee funds

Guarantee funds provide guarantees for credits and loans taking into account the risk of insolvency of the company (Sanneris,2015). They assist customers in completing the formalities associated with obtaining the credit, organize additional training, and also take the responsibility of monitoring the borrower in order to strengthen the cooperation with banks. However, as some researchers indicate, guarantees for SMEs have better impact in less developed regions (Armstrong et al., 2014) and in weaker companies (Garcia-Tabuenca & Crespo-Espert, 2010). According to the European Association of Guarantee Funds guarantee scheme for small and medium-sized enterprises has a positive impact on access of SMEs to credit and loans (Zecchini& Ventura, 2009) and their performance (Jae Won Kang& Heshmati, 2008; Riding et al., 2007). The most important factors influencing the access of SMEs to external financing are:

- level of guarantees offered (up to 80% of the loan), which should result in an increase of crediting of small and medium-sized enterprises, especially in times of crisis or for more risky projects,
- reduce the risk for banks, which in the case of smaller equity of SME it should soften Basel regulations and enable to award a larger financing,
- the guarantee is associated with additional analysis of the project and the financial situation of the borrower, which reduces the risk of human error and subjectivism.

Guarantee funds offer guarantees of loans and credits granted by banks and non-banking institutions, which have signed a cooperation agreement with guarantee fund. Therefore it is so easy to choose any guarantee fund and any bank.

Guarantee funds operate as a non-for-profit institutions, however, they operate in a long term and the assumption of self-financing force the funds to charge SMEs for guarantees issued. Guarantee funds were created to support entrepreneurship. Assumption that generally only SMEs have difficult access to the capital and the necessity to self-financing resulted in a limitation of clients of guarantee funds to entrepreneurs - but only entrepreneurs with stable financial situation and with their own contribution to the project (Makarska-Cynk, 2012, s. 10).

2 Loan Funds

Loans in Poland are granted by non-banking organizations operating as non-profit capital companies, foundations, chambers of commerce, associations. Most of them was set up in the 90s of XX century and financed from the aid programs for SMEs. They existed as independent financially loan funds, but dependent organizationally on the funding institution. These funds were originally managed by foundations or public sector entities. Only sometimes they were transformed into organizational units. Currently in Poland (end of 2012.) there are active 63 funds of which 63% are not separate entities but an activity within independent organizational unit like technological parks. It should be noted that number of loan funds dropped in 2010. when Micro Fund, lunched by the Polish-American Entrepreneurship Fund, gained the status of a banking institution. The total capitalization of loan funds in Poland in 2013 was 2.5 billion. PLN.

Most of loan funds serve also other services like consulting for companies, help in innovation's implementation, environmental protection, financial management, energy management, use of information technology, marketing and sales.

Many loan funds in Poland operate in one region and only for entrepreneurs (like guarantee funds), however we can find loan funds operating nationwide and providing loans to unemployed people starting their own business.

Market of loan funds in Poland is very diversified. We can highlight both very large funds whose capital exceeds 10 million PLN and small funds, distributing annually a few loans and having small financial resources. The majority of loan funds in Poland granted greater value of loans than the amount of their capital resources by mid-2011. Lack of data does not allow for a comparison of all the funds, but the reports on the implementation of the regional operational programs show that in 2012-2014 the value of loans granted has increased significantly in result of the JEREMIE initiative.

The loan funds usually serve SMEs having their main activity in the region preferred by the fund (usually the region where the fund has its office). Beneficiaries have to fulfill tax liabilities, timely regulate social insurance payables and they can't conduct activities defined as harmful to the environment or unethical (i.e. hazard or tobacco production). Loans may be destined for investments or operating activity or mix of these goals.

Some funds taking part in the JEREMIE initiative offered special conditions for borrowers like lower interest rates, provisions and contribution of the enterprise. Most loan funds don't limit the scope of the investment, so they don't indicate what kind of investments can be financed with the loan (i.e. the purchase of fixed assets, renovation, acquisition of real estate, etc.). The offer is wide, but the financial conditions are differentiated. Moreover, start-ups are excluded. Companies wishing to use the non-banking loans should be able to document the activity of at least three months.

Loans still are less popular than bank credits in Poland. Despite of the higher value of the loan per one enterprise, business entities still search for credit more willingly. However, the situation may be explained in different ways and the thesis could be formulated: if an enterprise once decides to use a loan, it will use it again. In this way the growing number of business units financing their activity with a loan grows as well as the year value of the loan per enterprise.

3 Success factors of loan and guarantee funds' activity⁸

The preliminary analysis showed that loan and guarantee funds in Poland achieved different results despite of the fact, that all these entities started from the similar point and that all of them were non-profit organizations, so they didn't have to concur with each other. Therefore two hypothesis were formulated *H1: There is a relation between characteristics of the loan funds' offer and their results*

The auxiliary hypothesis were formulated:

H1.1. There is a difference in min. interest of the loan between the loan funds obtaining the best, the worst and average results

H1.2. There is a difference in max. interest of the loan between the loan funds obtaining the best, the worst and average results

H1.3 There is a difference in level of provision of the loan between the loan funds obtaining the best, the worst and average results

H1.4 There is a difference in number of voivodeships served by the loan fund between the loan funds obtaining the best, the worst and average results

H1.5 There is a difference in results of loan funds between the loan funds serving advisory service and loan funds that don't provide the service

H1.6 There is a difference in results of loan funds between the loan funds providing information on business matters and loan funds that don't provide the information

H1.7 There is a difference in results of loan funds between the loan funds providing training and loan funds that don't provide the training

H1.8 There is a difference in results of loan funds between the loan funds providing loans within JEREMIE initiative and loan funds that don't participate in the initiative

H1.9 There is a difference in number of loan programs between the loan funds obtaining the best, the worst and average results

H1.10 There is a difference in min. value of the loan between the loan funds obtaining the best, the worst and average results

⁸ The results of the previous version of the analysis were presented for the first time in a book Waniak-Michalak H. (2015), *Wsparcie małych i średnich przedsiębiorstw przez organizacje niezarobkowe dla zysku. Znaczenie, ewidencja, raportowanie*, Difin, Warsaw, [Support of small and medium enterprises by non-profit organizations. Significance, recording, reporting]

H1.11 There is a difference in max. value of the loan between the loan funds obtaining the best, the worst and average results

H1.12 There is a difference in min. own contribution between the loan funds obtaining the best, the worst and average results

H1.13 There is a difference in results of loan funds between the loan funds providing loans to one type of the enterprise, two or three types (micro, small and medium enterprises).

and H2: *There is a relation between characteristics of the guarantee funds' offer and their results*

The auxiliary hypothesis were formulated:

H2.1 There is a difference in number of types of guarantees between the guarantee funds obtaining the best, the worst and average results

H2.2 There is a difference in number of banks cooperating with a guarantee fund between the guarantee funds obtaining the best, the worst and average results

H2.3 There is a difference in max. level of the provision for the guarantee between the guarantee funds obtaining the best, the worst and average results

H2.4 There is a difference in number of voivodships where entrepreneurs could come from between the guarantee funds obtaining the best, the worst and average results

H2.5 There is a difference in max. value of the guarantee between the guarantee funds obtaining the best, the worst and average results

At first all loan and guarantee funds were divided on three groups: the worst, average and the best funds. In order to evaluate the activities of the loan funds multi-criteria analysis method was used based on specific characteristics (variables xi) of the funds' activity. Data on the characteristics and components of the loans have been collected from the websites of organizations carrying out loan activity and from funds statutes. Data on the number and value of granted loans came from Polish Association of Loan Funds (*Polski Związek Funduszy Pożyczkowych- PZFP*) reports (2011). More actual PZFP reports didn't contain detailed information about results of every loan fund, but aggregated information.

After the initial research of loan activity of all loan funds in Poland, outcomes of loan activity- the information which could be a sign of success or failure was selected:

X1. the number of loans granted compared with the number of months of the loan fund activity,

X2. value of loans issued divided by the number of months of the activity,

X3. equity leverage (value of loans divided by equity)

As the determinants of the success (characteristics of the offer) following factors were taken: min. interest for the loan, max. interest for the loan, provision, number of voivodships⁹ where the loans are provided, advisory as the non-financial service (1-0 variable), providing information on business matters(1-0 variable), training(1-0 variable), providing loans within JEREMIE initiative (1-0 variable), number of loan programs (types of the loan)¹⁰, min. value of loan, max. value of loan, min. own contribution, type of the enterprise: microenterprise, small enterprise or medium enterprise (for all types 3 was given, for two types served 2 was given and if the loan served only one type of the enterprise 1 was given), max. period in months of financing.

In order to create a ranking of loan funds and to determine the sources or failure determinants zero-unitarisation method was used. This method allows to compare selected objects (decision variants) using different characteristics (criteria). But first, it requires the normalization of those characteristics. The most common method of standardization of the characteristics is the quotient transformation (i.e. in relation to the highest value). This allows to assess of the objects using a multi-criteria evaluation, taking into account all the characteristics (criteria) and, subsequently, the ranking of objects (decision variants) (Borkowski, Kukula, 2012).

All variables X1: X3 were recognized as stimulants- diagnostic variables increasing with the growth of the assessment. In order to normalize the features the formula was used:

$$z_{ij} = \frac{x_{ij} - \min_j x_{ij}}{\max_j x_{ij} - \min_j x_{ij}}$$

⁹ provinces (*województwa*) of Poland. Poland as of 2015 has 16 województwa.

¹⁰ the loan conditions, including provision, interests, securities required, type of projects financed by the loan etc.

where $i=1,2,3$; $j=1,2,\dots,71$ (number of loan funds evaluated); z_{ij} was a normalized value of the characteristic (1=value loans per month, 2=number of loans per month, 3=equity leverage) for every loan fund.

After normalization of all chosen characteristics a total multi-criteria assessment was calculated according to the formula:

$$Q_j = \sum_{i=1}^s z_{ij}$$

where $i=1,2,3$; $j=1,2,\dots,71$ (number of loan funds evaluated); $s=3$

After preparing loan funds ranking results and ordering them from the highest to the lowest Q value, funds obtaining the best result, average and the worst score were selected using the formula:

$$U = \frac{\max Q_j - \min Q_j}{3}$$

where the best loan funds were chosen using the formula:

$$Q \in (\max_j Q_j - U; \max_j Q_j)$$

and the worst:

$$Q \in (\min_j Q_j; \max_j Q_j - 2U)$$

The analysis showed that 52 loan funds in Poland achieved the results classified as "the worst". Only 3 loan funds could be described as "the best". These the best funds had both the number and value of granted loans outstanding. One of the best loan funds issued more than 1 mln. PLN of loans a month while the best of the worst loan funds issued only 0,5 mln. PLN of loans. Ranking was the first step for drawing the conclusions about the success factors of the results obtained by the loan funds.

The best loan funds could be described as loan funds distributing a large number of loans, with high value of loans provided and with very high level of equity leverage.

The success factors (characteristics differentiating them from other funds) were: offering of several types of loan (trying to satisfy different needs of clients), activity run for entrepreneurs from many voivodships and setting the max. loan on the level allowing to differentiate the risk and maximize the number of SMEs served. This fact may mean that the focusing on high borrowings limits the offer of the loan fund to other borrowers. It reduces lending potential and thereby lowers long-term equity leverage because higher loans are in fact the most frequently given for longer periods, thus reduce turnover capital.

Further analysis with T-test showed no significant difference in values and the number of loans between the funds involved in the JEREMIE initiative (significance $p = 0.23$ and 0.35) and not offering loans under this initiative. Pearson correlation analysis also showed no significant correlation between interest rates and measures of success like value, number of loans and equity leverage. The study showed only significant correlation between the number of loans granted and the provision for the loan, which may indicate that businesses benefiting from lower loan taken for shorter periods pay more attention to the provision (the current cost of the loan, paid in the moment of signing the agreement) than the interest rate (future cost of the loan). The same results showed on-way-analysis of variance ANOVA. Only means of the **level of provision** and the **number of voivodeships** (regions served by the guarantee fund) were significantly different ($p=0,00$).

Offering to entrepreneurs additional services, like consultancy or training, also didn't influence significantly the number and value of the financial instruments. T-test showed no significant difference between funds offering such a service and funds not-offering nor advisory nor training services. The p values are higher than 0.05, which allows to accept the hypothesis H_0 . It is therefore necessary in this case to say that the number of loans ($p = 0.13$) and the value of loans ($p = 0.38$) for the loan funds offering advisory service is not significantly different from the number and value of loans offered by the other loan funds. It must therefore be concluded that entrepreneurs seek loan funds for one purpose and they don't expect a complete service. Therefore extending the offer of organizations running loans funds and the creation of technology incubators or entrepreneurship incubators is mainly done to exploit the potential of the organization, not just for the benefit of entrepreneurs.

Summarizing the hypothesis $H_{1.3}$ and $H_{1.4}$ were accepted and the Hypothesis $H_{1.1}$ - $H_{1.2}$ and $H_{1.5}$ - $H_{1.13}$ were rejected. However the Hypothesis $H_{1.1}$ was accepted.

For the evaluation of guarantee funds, such as in case of loan funds, a multi-criteria analysis method based on specific characteristics (variables X_i) of guarantee funds activity were used. The information on the factors might affecting the success or failure of guarantee funds was taken from the websites of guarantee funds and statutes and regulations of the funds (i.e. components of the funds' offer). For the analysis were selected following information contained in the report of National Association of Guarantee Funds (KSFP) (2014):

- X1. engagement (number of active guarantees divided by equity)
- X2. value of guarantees issued in 2013.
- X3. the number of guarantees issued in 2013.
- X4. the value of guarantees paid in 2013 in relation to the value of active guarantees

On the next step of the analysis following success factors or failure were considered: number of types of guarantees (loan, leasing, wadium guarantee), number of banks cooperating with a guarantee fund, max. level of the provision for the guarantee, number of voivodships where entrepreneurs could come from, max. value of the guarantee.

In order to create a ranking of loan funds and to determine the sources or failure determinants zero-unitarisation method was used,

All variables X1: X4 were recognized as stimulants- diagnostic variables increasing with the growth of the assessment. In order to normalize the features the formula was used:

$$z_{ij} = \frac{x_{ij} - \min_j x_{ij}}{\max_j x_{ij} - \min_j x_{ij}}$$

where $i=1,2,3,4$; $j=1,2,\dots,50$ (number of guarantee funds evaluated) and z_{ij} was a normalized value of the characteristic (1=engagement, 2=value of guarantees, 3=number of guarantees; 4- value of guarantees paid in relation to active guarantees) for every guarantee fund.

After normalization of all chosen characteristics a total multi-criteria assessment was calculated according to the formula:

$$Q_j = \sum_{i=1}^s z_{ij}$$

where $i=1,2,3,4$; $j=1,2,\dots,50$ (number of guarantee funds evaluated) and $s=4$

After preparing the ranking of guarantee funds' results and ordering them from the highest to the lowest Q value, funds obtaining the best result, average and the worst score were selected using the formula:

$$U = \frac{\max Q_j - \min Q_j}{3}$$

where the best loan funds were fulfilling the requirement :

$$Q \in (2,35; 3,46)$$

and the worst:

$$Q \in (1,23; 0,11)$$

The analysis showed that 5 of the guarantee funds can be considered as the best and 25 as the funds obtaining the worst results. In comparison to loan funds the variation of results is greater and suggests that the offer and terms of service guarantee funds in Poland are similar to each other, or that entrepreneurs don't see differences between the offers.

On-way-between group analysis ANOVA showed that only means of **number of banks cooperating** ($p=0,035$) with guarantee funds and the **max. value of guarantee** ($p=0,007$) were significantly different. The best guarantee funds could be described as funds cooperating with smaller number of banks but providing higher guarantees. It means, that their success depends not on the number of banks cooperating, but probably other factors like the intensity of promotion activities and quality of existing cooperation. In some cases, shareholders or guarantee funds are commercial banks. In the situation the cooperation of bank and the fund is completely different than the cooperation of other guarantee funds run by foundations or associations. An essential element of good results of the guarantee fund is the involvement of the bank in the promotion of funds' activities. Despite of so great developed system of guarantee funds still (as the researches indicate) very few entrepreneurs in Poland know about the possibility of use this form of security of the loan or credit (PSDB, 2012, p.39). Summarizing only the hypothesis H2.2 and H2.5 were accepted as well as the hypothesis H2.

Summary

Summarizing, the analysis let to accept the hypothesis 1 and 2. A part of the characteristics of the offer of loan funds differentiated the worst and the best loan funds. In guarantee funds, the most important was the cooperation with banks and value of guarantee. However, the high number of banks is not a key driver of success of guarantee funds but the strength of the cooperation.

The conclusion can be that the support for small and medium-sized enterprises in every country should be designed taking into consideration the organizational capacity, the needs of entrepreneurs, available sources of financing and the possibilities of engagement of the private sector. In most countries, the banking sector is involved in the distribution of funds to small and micro entrepreneurs. In Poland different approach was taken, because bank sector at the beginning of 90s of XX century was in the initial phase of development and thus not willing to engage in distribution of funds to SMEs. Poland is a country where private sector after second world war for many years hasn't existed. At the beginning of Polish transformation everything was new, even small business. Banks had problems with calculating the average life of the business, because there were no statistics for the previous periods. That's why different, than in western countries, solution was taken. However, system of guarantee funds was constructed on the example of Italian guarantee funds.

Loan funds in Poland having the best results (in terms of number and value of these financial instruments) have a wide offer of different types of loans (differences in purpose of the loan, interest rates, terms of the loan, types of borrower's activity, number of years of the business on the market) addressed to different beneficiaries. At the same time the average amount of loans offered by the most active lending institutions was lower than in other loan funds. The results of guarantee funds' activity are influenced by the size of the equity, the use of re-guarantees (eg. Bank Gospodarstwa Krajowego), the promotion of activities and the quality of established cooperation with commercial banks. Better results are achieved by guarantee funds whose shareholders or partners are commercial banks. Then the cooperation between a fund and a bank is much more efficient. An essential reason of good results is the involvement of banks in the promotion of activities of funds.

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**SECTION 2
CHALLENGES OF HUMAN RESOURCES IN THE WORLD WITHOUT
BORDERS**

*TOPSIS ANALYSIS OF CHANGES OF QUALITY OF HUMAN CAPITAL IN
EUROPEAN UNION COUNTRIES*

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Abstract

Purpose of the article In the case of highly developed countries quality of human capital (QHC) is currently considered as one of the most important factors determining international competitiveness and growth of economies. The fundamental role of the QHC can be seen in the EU policy documents such as Europe 2020 strategy. In this context the main purpose of the article is to evaluate the QHC in the EU countries at the macroeconomic level and to make comparison between so called “new” member states that joined the EU after the year 2004 and the “old” EU countries.

Methodology/methods QHC is considered as a multidimensional phenomenon. As a result, in the research Technique for Order Preference by Similarity to Ideal Solution (TOPSIS) was applied. The method enables to evaluate the objects in terms of economic phenomena that have multidimensional character based on the set of detailed economic attributes (variables). In the research eight diagnostic variables were used. The synthetic index describing the relative level of QHC in the analysed economies was estimated, which enabled to propose a rating of the countries and group them into homogenous subsets.

Scientific aim The scientific aim of the article was to evaluate the progress obtained by the “new” member states after joining the EU. As a result, two ratings grouping the EU countries from the once with the highest level of QHC to the once with its lowest level in the year 2004 and 2012 were determined.

Findings The comparison of the ratings in the year 2004 and 2012 shows that most of the “new” member states have made a significant progress in the analysed period.

Conclusions The conducted multidimensional research enabled to quantify QHC in the EU countries in the year 2004 and 2012 with application of multidimensional perspective. As a result it enabled to evaluate the changes of that phenomenon in the period and to point the countries that are the leaders in the field.

Keywords: Quality of Human Capital, macroeconomic perspective, TOPSIS method, European Union countries

JEL Classification: C38, E24

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Introduction

Quality of human capital (QHC) makes currently one of the most important factor influencing growth in the case of developed economies. It is treated as one of pillars of knowledge-based economy (KBE) (Madrak-Grochowska, 2015; World Bank, 2007). Effective utilisation of potential of the KBE is considered as a condition sine qua non for quick and sustainable growth in the case of highly developed economies and countries that want to avoid middle income trap (Wronowska, 2015; Balcerzak et al., 2016). In this context, the role of QHC has been also stressed by European Commission in the main European Union long term policy guidelines such as Europe 2020 strategy (Balcerzak, 2015; Baležentis et al., 2011; European Commission, 2010; Hobza & Mourre, 2010). As a result, the aim of the research is to evaluate the QHC in the EU countries at the macroeconomic level. The additional purpose of the paper is to make comparison between “new” member states that joined EU after the year 2004 and the “old” EU economies, and to evaluate the progress obtained by the “new” member states after joining the EU.

The QHC is usually treated as a multivariate phenomenon regardless of whether it is examined from micro or macro perspective (Balcerzak, 2016, Jantón-Drozdowska & Majewska, 2015; Stankiewicz and Moczulska, 2015; Bieszk-Stolorz and Markowicz, 2015; Dominiak et al. 2015; Richert-Kaźmierska, 2015; Woźniak-Jęchorek, 2015). Thus, in the case of quantitative research, it should be analysed with application of multivariate analysis and taxonomic tools (see Balcerzak and Pietrzak 2016a, 2016b, 2016c, 2016d). In the current research TOPSIS method was applied. The research was conducted for the years 2004 and 2012 based on Eurostat data.

1 Short outline of TOPSIS method as a tool of multiple-criteria analysis

Technique for Order Preference by Similarity to Ideal Solution (TOPSIS) is a method commonly used in current economic research (Yoon and Hwang, 1995). The most often application of the method relates to a multiple criteria decision making problems (MADM). However, it can be also used for evaluation and description of complex multivariate economic objects. It enables synthetic quantification of multidimensional economic phenomena with a taxonomic measure of development (TMD). In that case TMD is described as a similarity to the ideal solution, which is obtained by estimating a proximity of a given phenomenon to a positive ideal solution and its distance from a negative ideal solution.

The measurement of the objects in terms of complex multivariate economic phenomenon is based on a set of detailed economic attributes (variables) that can describe single feature of complex phenomenon. On the basis of the used variables after evaluation of separation measure from the positive ideal solution and separation measure from negative ideal solution a TMD is calculated, where separation measure from negative ideal solution is divided by the sum of separation measures from the positive and negative ideal solutions. Thus, TMD takes into account all the determinants of analysed phenomenon.

2 Application of TOPSIS method to measuring quality of human capital in Europe

The current analysis was done for 24 European Union countries in the years 2004 and 2012. Luxemburg, Malta and Cyprus were eliminated from the research due to unavailability of data. The Croatia was not taken into consideration as it has been a member of UE only since 2013. Quality of human capital at macroeconomic level was analysed here from the perspective of conditions that must be fulfilled by given economies to be able to compete effectively in global knowledge-based economy (KBE) (Balcerzak, 2009; Balcerzak & Pietrzak, 2016c, Balcerzak, Pietrzak & Rogalska, 2016). A set of eight diagnostic variables related to QHC, which are crucial for exploiting the potential of KBE, is given in Table 1. The eight variables were used for calculation of TMD.

Table 1 Diagnostic variables used for evaluation of quality of human capital in EU countries

Macroeconomic and labour market effectiveness
X_1^1 – Labour productivity (percentage of EU28 total based on PPS per employed person)
X_2^1 – Employment rate (20 to 65) (percentage of total population)
Quality of education
X_1^2 – Lifelong learning - participation rate in education and training (last 4 weeks) (% of population 25 to 64)
X_2^2 – Science and technology graduates (tertiary graduates in science and technology per 1 000 inhabitants aged 20-29 years)

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National innovation system

X_1^3 – Exports of high technology products as a share of total exports

X_2^3 – Total intramural R&D expenditure (GERD) (percentage of GDP)

Health and social cohesion

X_1^4 – People at risk of poverty or social exclusion (percentage of total population)

X_2^4 – Material deprivation rate (percentage of total population)

Source: own work.

In the first stage last two diagnostic variables X_1^4 and X_2^4 , which were dis-stimulant were transferred into stimulants. Then, all eight variables were normalized with classic standardization formula. In the next stage a positive ideal solution and negative ideal solution with maximum and minimum values respectively for all variables for the years 2004 and 2012 were pointed. Thus, a constant ideal solutions for both years were calculated, which enabled to make comparisons between the year 2004 and 2012. With application of the Euclidean metric a distance from positive and negative ideal solutions for all diagnostic variables were obtained. Finally, the value of TMD for all the variables was obtained by combining the proximity to the positive ideal solution and the remoteness from the negative ideal solution, where separation measures from negative ideal solution is divided by the sum of separation measures from the positive and negative ideal solutions. Two rankings of countries for the year 2004 and 2012 were obtained. In the last stage, based on the ranking a natural breaks method was used to group the countries into four homogenous sub-steps, where fourth class was grouping countries characterized with the highest level of quality of human capital and first class was grouping countries with its lowest level. The results are given in Table 2.

Table 2 Results of TOPSIS analysis of quality of human capital for the years 2004 and 2012

2004				2012			
Country	TMD	Ranking	Class	Country	TMD	Ranking	Class
Sweden	0,69	1	4	Sweden	0,72	1	4
Finland	0,69	2	4	Denmark	0,63	2	4
Denmark	0,67	3	4	Finland	0,63	3	4
United Kingdom	0,61	4	4	Netherlands	0,57	4	4
Netherlands	0,60	5	4	Austria	0,55	5	3
Ireland	0,58	6	3	France	0,55	6	3
France	0,56	7	3	Germany	0,52	7	3
Austria	0,53	8	3	United Kingdom	0,50	8	3
Germany	0,49	9	3	Ireland	0,49	9	3
Belgium	0,45	10	3	Czech Republic	0,47	10	3
Slovenia	0,43	11	3	Slovenia	0,44	11	3
Spain	0,38	12	2	Belgium	0,42	12	3
Czech Republic	0,37	13	2	Estonia	0,40	13	2
Italy	0,35	14	2	Lithuania	0,35	14	2
Portugal	0,33	15	2	Portugal	0,35	15	2
Estonia	0,33	16	2	Slovakia	0,33	16	2
Lithuania	0,33	17	2	Spain	0,33	17	2
Hungary	0,28	18	2	Poland	0,29	18	2

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Greece	0,27	19	2	Italy	0,29	19	2
Latvia	0,24	20	1	Hungary	0,26	20	1
Slovakia	0,22	21	1	Romania	0,24	21	1
Romania	0,18	22	1	Latvia	0,24	22	1
Poland	0,17	23	1	Greece	0,20	23	1
Bulgaria	0,12	24	1	Bulgaria	0,14	24	1

Source: own estimation based on Eurostat data.

The results show that the EU countries can be divided into two heterogeneous groups in terms of the level of the QHC. The “old” EU member states, with the exception of the southern countries, can be categorized as the economies with high level of the QHC. The southern European countries and the “new” member states form a sub-set with relatively lower level of the QHC from the perspective of requirements of knowledge-based economy. The economies from the first group were assigned to the fourth and third class. The economies with lower level of the QHC are found in the second and first class.

In the year 2004, in the fourth class with the highest level of the QHC one could find Scandinavian countries, Netherlands and United Kingdom. In the years 2004 and 2012 the group of leaders was quite stable. Only United Kingdom was classified in the third class in the last year of the research. In the third class in both years one could find Germany, Belgium, France, Austria and Ireland. Except Ireland these countries can be characterized with many institutional similarities and quite close macroeconomic conditions. In the year 2004 in this group one could also find Slovenia and additionally Czech Republic in the year 2012. It means that these two “new” members states were able to join the group of European economies that are characterised with high level of quality of human capital from the perspective of knowledge based economy.

In spite of the fact that southern European economies such as Spain, Italy, Portugal and Greece joined the EU before the year 2004, they are still characterized with relatively low level of the QHC from the macroeconomic perspective. Additionally, in the year 2012 Greece was classified in the first class that groups the economies with the lowest level of the QHC, which indicates a negative direction of changes in the country.

Such “new” member states as Estonia, Lithuania, Czech Republic, and Hungary were grouped in the second class in the year 2004. In the year 2012 also Poland joined this sub-set. Latvia, Romania and Bulgaria were assigned to the first class in both years. This group can be characterized with relatively lowest level of the QHC at macroeconomic level.

In the last stage of the analysis a percentage changes of the values of TMD for the QHC in the years 2004-2012 were calculated. Based on the results, also in this case the countries were grouped into four homogenous sub-sets with application of natural breaks method. The results are presented in table 3.

Table 3 Percentage difference of values of TMD for quality of human capital in the years 2004-2012

2004-2012							
Countries	Percentage difference	Ranking	Class	Countries	Percentage difference	Ranking	Class
Poland	73,02%	1	4	Latvia	-0,83%	13	2
Slovakia	50,82%	2	4	France	-1,34%	14	2
Romania	33,43%	3	4	Netherlands	-5,58%	15	2
Czech Republic	26,32%	4	3	Denmark	-5,84%	16	2
Estonia	21,29%	5	3	Belgium	-7,17%	17	2
Bulgaria	16,71%	6	3	Finland	-7,61%	18	2
Lithuania	8,38%	7	3	Hungary	-9,32%	19	2
Germany	5,87%	8	3	Spain	-12,47%	20	2
Portugal	3,96%	9	2	Ireland	-15,42%	21	2
Sweden	3,93%	10	2	Italy	-17,60%	22	2

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Austria	3,48%	11	2	United Kingdom	-18,06%	23	1
Slovenia	1,84%	12	2	Greece	-26,57%	24	1

Source: own estimation based on Eurostat data.

By analogy, in regard to assessment of dynamics of the measure of the QHC all analysed countries have been assigned to four classes. Countries assigned to fourth and third classes are characterized by relatively high positive growth rates of value of the QHC in the analysed period. The largest improvement in that field was obtained by Poland and Slovakia with positive change of more than 70 and 50% respectively in regard to the value of measure of the QHC. Additionally, the increase of more than 20% was obtained by Romania, Czech Republic and Estonia. In the third class with positive dynamics of the value of the measure one could also find Bulgaria, Lithuania and Germany.

However, what is especially important from the perspective of contribution of this research, based on the obtained results it can be seen that the positive changes obtained by the “new” member states cannot be treated only as the consequence of low starting point and simple abilities to take advantage of the “convergence” process. Relatively bad results obtained by “southern old” EU member states, which to some extent were also influenced by the severe consequences of the last global financial crisis, show that the changes in the QHC are influenced by many institutional and policy factors. These factors should be the subject of special interests of all policy makers. Thus, they should be also the subject of profound research.

Conclusion

The article concentrated on the problem of measurement of QHC at macroeconomic level in European Union countries. The additional purpose of the article was to conduct comparison between “new” and “old” member of the EU and to assess the progress obtained by the “new” member states. Due to multivariate character of the analysed phenomenon the research was done with application of TOPSIS method. The method enabled to make rankings of the countries and to verify their relative progress in the analysed period. The conducted research confirmed a meaning progress obtained by Central European economies.

The divergence between the “new” member states and “southern” European countries in relation to the QHC shows that the dynamics of changes of the level of the QHC at macroeconomic level is not only the result of simple “caching up” process, but it is influenced by many determinants, which can be modified by government’s policy.

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A COMPARISON OF COGNITIVE LOAD IN CLOCK AND TIME TYPES

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Abstract

Purpose of the article Atypical task start times have been shown to affect task performance via cognitive load. In order to test the hypothesis that cognitive load increases with the use of analog clocks, I examine the cognitive load induced by analog and digital clocks, and by typical and atypical start times, to determine whether cognitive load is increased primarily by analog clock faces, or if atypical start times increase cognitive load through some other mechanism.

Methodology/methods The present study asked respondents to calculate the amount of time left for a task in five examples of each of eight possible combinations of digital clock faces, analog clock faces, and prototypical and atypical times. Responses were timed and checked for accuracy. Response time was presumed to provide a proxy for the respondent's cognitive load.

Scientific aim Since time-remaining calculations are an important component of task performance, an accurate description of the causes of increased cognitive load will enable effective load-reduction mechanisms. Prior researchers did not test their assumption that childhood training with prototypical times on analog clocks left workers ill-equipped to make time-remaining calculations in atypical start time scenarios; thus, this study aims to pinpoint the causes of the increased cognitive load.

Findings Cognitive load increased in all atypical cases, whether using analog or digital clocks. However, in this initial study, analog clocks were not better than digital clocks. Cognitive load was clearly related to how atypical the start time was: the more atypical the times were, the higher the cognitive load rose.

Conclusions Because the cognitive load was similar between analog and digital clocks, another explanation for the cognitive load increase must be found.

Keywords: time, cognitive load, punctuated equilibrium

JEL Classification: M12

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Introduction

The modern workplace is full of prompts to switch tasks at a moment's notice: from the ringing telephone and the email ping to the walk-in client and the emergency meeting (Addas & Pinsonneault, 2010). However, two recent papers (Labianca, Moon, & Watt, 2005; Sterling, Lopez-Kidwell, Labianca, & Moon, 2013) suggest that individuals and groups which start a task at an atypical time (e.g. 3:37), rather than a typical time (e.g. 3:15), have more difficulty with performance. Both papers examined the performance effects of start time, and found a performance drop when respondents were asked to start a task at an atypical time. This performance drop is due, at its core, to increased cognitive load for teams that start at atypical times. The researchers suggest that, since most people learned to tell time in quarter hour increments on an analog clock face, atypical start times require additional calculations to convert the analog clock face to numbers, calculate the increments to deadline, and then reconvert that information to an analog face. One of the implications of their work is the suggestion that as analog clocks disappear these issues should also disappear. However, they did not test this hypothesis.

Research in group development and performance has demonstrated the importance of calculating remaining task time (Gersick, 1988, 1989). During the first half of the task times, teams gather information and structure the task; at the halfway point of the time allotted for the task, they switch to actual performance of the task. Having this transition occur smoothly and quickly has been shown to lead to improved performance of the team, both in the quality of their work and in its creativity. When this halfway point transition is disrupted, the team performs more poorly. One such disruption has been observed when team members disagree about the timing of the transition (Gersick, 1988). Labianca and Sterling created an artificial disruption of this type by manipulating task start times; this made determination of the time remaining more difficult, and confirmed the causative role of this difficulty in the disruption of the team transition, and, hence, its performance (Labianca et al., 2005; Sterling et al., 2013). Thus, problems determining the time remaining for a task have been shown to reduce team performance. Knowing how to reduce the difficulty of this determination would be an important managerial intervention.

While the exact mechanism of the performance issues seen with atypical start times is not at the core of previous research, it does have significant consequences for business, especially since interruptions rarely arrive at prototypical times. If the performance drop is due to the cognitive load of calculating time intervals using an analog clock, with the associated errors, the obvious solution is to substitute digital clocks throughout the workplace. If, however, the additional cognitive load is due to some other cause, digital clocks will not eliminate the problem – and much time and money may be wasted on a non-solution. Furthermore, most research in computer user interfaces has shown that information is more quickly grasped via analog displays (Friedman & Laycock, 1989; Rothengatter & Huguenin, 2004), and thus digital clocks may not reduce the cognitive load seen with atypical task start times. Our research question, then, is: what relationship do analog clocks have to the increase in cognitive load seen when people must start tasks at non-prototypical times?

1 Literature Review

This research is focusing on three basic concepts: cognitive load, prototypical versus atypical task times, and analog versus digital clock faces.

1.1 Cognitive Load

Cognitive load refers to the limited resources that the human brain has available in working memory for use in cognitive work (Lavie, Hirst, de Fockert, & Viding, 2004). Research has shown that the working memory available to most people is relatively small (Lavie, 2005). When working memory is filled, the brain has to start task-switching and level changing in order to cope with the information being manipulated. This results in slower overall processing of inputs, the cognition itself, and its outputs (Gevins & Smith, 2000). Thus, it may take longer to recognize situations, to understand what is being perceived, to make decisions based upon that input, and to produce output (if appropriate) as a result of the cognitive decisions. In particular, much past work has shown that when cognitive load increases, task time often increases, and accuracy can decrease (Lavie, 2005). Cognitive load can be measured either through perceptions of load via self-report, or more directly by measuring task time and accuracy (Lavie et al., 2004).

1.2 Prototypical and Atypical Times

As used by Labianca, Sterling, and their colleagues, prototypical times are those times which occur at quarter-hour increments: exactly on the hour, half-past the hour, and a quarter-past and three quarters-past the hour. In their research, they showed that tasks started at a prototypical time were performed better than those

started at the atypical time of seven minutes past the hour. They further showed that the reduction in performance was correlated with an increase in cognitive load, suggesting that that people faced with atypical times had a higher cognitive load simply from the different starting time. They also observed that the atypical start time teams tended to have some confusion at the halfway point in the task time about how much time remained for the task, disrupting the team's transition to task performance (Labianca et al., 2005; Sterling et al., 2013). Note, however, that Labianca, Sterling, and their colleagues did not examine times other than 7 minutes from the hour for start and finish times. While this allowed them to maximize the potential difficulty of the transitions of their respondents, they had no way to determine if the effect was homogeneous across atypical times, or if the effect was more pronounced the further the task start moved from a prototypical time. They also measured cognitive load using a self-report of perceived cognitive load, rather than through reaction times or accuracy.

1.3 Analog and Digital Clock Faces

A clock face is fundamentally an information display. Much research has been done to determine the best way(s) to present information quickly and accurately, for example in airplane cockpits, etc. Because analog faces are preferred in most environments where quick response is required, it seems improbable that the cognitive load observed by Labianca and Sterling is caused by analog clocks. In a study comparing analog and digital speedometers, it was found that drivers who were simultaneously performing tasks responded more quickly to changes in analog speedometers (Rothengatter & Huguenin, 2004). A study of children learning to tell time showed that they calculated relative times more easily using analog clocks; older children showed no differences in their processing of analog and digital times (Friedman & Laycock, 1989). Analog displays were found to be superior when children were asked to compare differences in times, and perhaps most tellingly, respondents reported imagining analog clock faces in the digital conditions (Paivio, 1978). At least one study showed an improved ability to tell differences between times with digital faces (Goolkasian & Bunting, 1985); however, a more recent study indicated that while subjects were able to read times from digital displays more quickly, when this was combined with other tasks (e.g., determining offsets) there was no advantage for digital displays (Miller & Penningroth, 1997). Altogether, these findings suggest that the use of digital clock faces does not reduce cognitive load, and that digital clock faces may actually increase cognitive load when comparing or predicting times.

2 Theory

Gersick's work tells us that teams will transition to task performance at the mid-point of the allotted time; thus, team members must look at a clock showing the current time, and then, using the known task start time, calculate the time remaining for the task. Labianca et al. used a post-hoc self-report measure of cognitive load, which showed an increased cognitive load in teams starting at atypical times. Although they did not explicitly observe cognitive load during the task, they conjectured that the load increase occurred when the team members attempted to calculate the mid-point and then persisted past the end of the task. Based on this conjecture, they suggest that the observed increase in cognitive load is due to the use of analog clocks, and the method by which people are taught to tell time using analog clocks.

The work done in user interface design, however, suggests that analog clocks should be better than digital clocks for determining a span of time. Figure 1 gives an example, which shows that determination of task midpoint should be simple on an analog clock, regardless of whether the start time is prototypical or atypical. The digital clocks show the same times, and may require more cognitive load to determine task midpoint.

From this, we arrive at our hypotheses:

Digital displays may allow quicker determination of an exact value than analog display does. However, previous research shows that people determine differences in values more quickly with analog displays than digital displays. Since the determination of the amount of time remaining for a task involves the difference between two values (current time and task end time), it should be advantageous to have an analog display. The analog display allows for rapid comparison and estimation of the angle between two times, which would then be converted into an estimate of the time difference by comparison with known, easy-to-remember times such as prototypical times. Much of this estimation is performed by the visual cortex and thus has less effect on cognitive load. However, when faced with a digital display, the calculation of the time remaining is entirely cognitive – the individual must perceive and interpret the numbers on the display, and then subtract them from those for the end time, possibly having to correct for crossing hour boundaries. I therefore expect that individuals will have less problem determining the time remaining from an analog clock face than from a digital clock face, due to the reduction in cognitive load.

H1: Cognitive load from use of analog clock faces will be lower than that with digital clock faces.







Starting Time Type	"We have an hour. Let's plan our attack." (Start / pre-transition)	"Oh, hey, we'd better start putting this together!" (1 minute before midpoint / transition)	"Almost done, let's wrap it up" (2 minutes before end / post transition)
Typical			
	02 : 00	02 : 29	02 : 58
Atypical			
	03 : 07	03 : 36	04 : 05

Figure 1. Comparison of Analog Versus Digital Clocks During a Task for Prototypical and Atypical Start Times

The value of analog devices is the ability to rapidly estimate the angles between two values visually, and then convert that angle into a value. The easier the angles are to convert to a value, the lower the cognitive load of this translation; we can quickly calculate certain increments, and easily see that particular angles must be exact when they point to known points on a circle. For instance, when faced with two times fifteen minutes apart, we quickly perceive the angle as being ninety degrees. The conversion for a ninety degree difference in two minute hands is equally simple, since we know that each ninety degrees corresponds to fifteen minutes. So we would expect that when the angles are perceived to be ninety degrees, one hundred and eighty degrees, or two hundred and seventy degrees (or zero degrees), time estimation should be quite quick. The cognitive load will be due only to the verification that the angle is exactly a multiple of ninety degrees, and then time determination is automatic from that multiple.

Similarly, when one of the hands is on a prototypical time (again, 0, 90, 180, or 270 degrees), then the estimation of the time to another hand happens fairly quickly. Since one end is grounded on a known and automatic point, we only actually have to interpret the angle of the other hand to that known point to estimate the time. The cognitive load involved is simply the estimation of how far into a typical interval the one hand is, and then estimating the time from that. This should happen roughly as quickly as the verification of angles of exact multiples of ninety degrees from the previous case.

In the case where both hands are pointing to prototypical times, our interpretation of the time difference becomes almost automatic. We know that the angle is an exact multiple of ninety degrees without having to verify the results of our visual processing, and have memorized what each of those intervals corresponds to in minutes. The entire process should be almost automatic and impose no cognitive load.

In the final case, when both hands are at atypical times, the individual will have to do more work. Either the angle could be estimated, and then converted to a time displacement, or one or both hands could be displaced visually in the imagination to the nearest prototypical point, and then, using the visualized hand(s) as a basis, estimate the time that was added or subtracted. In either case, the individual may take additional time to verify their initial estimate, making the cognitive load for this case rather high.

H2: Cognitive load will be lowest on analog clocks when current time, task end time, and the interval between those times are all prototypical. Cognitive load on analog clocks will be highest when none of those are prototypical. When one or two of the three times are prototypical, the cognitive load will be intermediate to the two extremes.

For digital clocks, the cases are somewhat simpler. When the task end time and the current time are both prototypical, again the determination of the time remaining will be nearly automatic. However, when either is not prototypical, the individual will tend to determine the difference between the two by subtraction modulo 60. The prototypicality of the interval itself will not matter; it is not immediately obvious visually that two times are 15, 30, or 45 minutes apart, except in the case that the times are already prototypical. Times that are exactly 60 or 0 minutes apart are a special case, though, where determination will be almost automatic.

H3: Cognitive load with digital clocks will be lowest when both the current time and the task end time are prototypical, or when the current time and the task end time are the same or one hour apart. It will be higher when either time is atypical.

Finally, all atypical times are not alike. When a task time or current time are close to a prototypical time, an individual might visualize that as actually being a prototypical time, estimating the time using that prototypical time (which we have seen can happen quickly), and then modifying it by the amount the atypical time was displaced. For instance, if you are looking at an analog clock that reads 13:01, and you know that your task finishes at 13:14, you probably look at the hands, note quickly that they are nearly ninety degrees apart (i.e. 15 minutes), and that the offset is one minute for each hand, resulting in 13 minutes, without having to verify the actual angle of the hands to estimate 13 minutes. We are probably more comfortable doing this when only one hand needs to be "moved" in this fashion. We do a similar thing with digital displays: a quick offset of a prototypical time by a small number enables us to avoid arbitrary numbers and modulo 60 arithmetic. The further away the interval, current time, and / or task end time get from prototypical, the more difficult this becomes. Thus, we expect that cognitive load grows as the atypicality of the times involved in the time remaining determination increases.

H4: As the atypicality of the task end time, the current time, and the time remaining increases, the cognitive load increases.

3. Method

We have four main variables to consider: clock type, typicality of start and finish time, typicality of current time, and typicality of the interval of time remaining. We do not consider situations where the total task time itself might be atypical. While this would normally indicate sixteen possible cases, in reality several cases are not possible (e.g., it is not possible to have a prototypical start and finish time, prototypical current time, and atypical interval). When these impossible conditions are removed, ten cases remain, shown in Table 1. For each case, we generated five random start times, current times, and interval length times. We then created a page for each situation, in which the respondent was told what the task start time was, and shown a clock face that indicated the current time. The respondent was to type in the number of minutes remaining to perform the task. Each response was timed.

Table 1. Experimental Cases

Clock Type	Start / Finish Time	Current Time	Interval Remaining	Case
Analog	Prototypical	Prototypical	Prototypical	1
			Atypical	Not Possible
		Atypical	Prototypical	Not Possible
			Atypical	2
	Atypical	Prototypical	Prototypical	Not Possible
			Atypical	3
		Atypical	Prototypical	4
			Atypical	5
Digital	Prototypical	Prototypical	Prototypical	6
			Atypical	Not Possible
		Atypical	Prototypical	Not Possible
			Atypical	7
	Atypical	Prototypical	Prototypical	Not Possible
			Atypical	8
		Atypical	Prototypical	9
			Atypical	10

The respondents were a convenience sample of students, drawn from a third-year population of undergraduates. Participants were offered extra credit in an MIS course for participating in the research. Since this study examines basic characteristics of people rather than informed decisions that might be modified by experience, the use of students and/or a convenience sample should not bias the results. At worst, the students should be more comfortable with digital clock faces than older respondents or less economically advantaged respondents might be; so supporting H1 with this sample will actually be more difficult than it would be with a truly random sample.

Respondents were checked to make sure that they could view each clock face without having to scroll. The respondents were also reminded to not do anything else while they took the study, and that they would be evaluated on both their speed and accuracy. A rough measure of this, based on the product of the time they took on a question and how far it was from the correct answer, was continuously calculated and displayed to the student, to help keep them focused on the study and motivate them to do their best. These steps should reduce any increases in cognitive load due to outside influences, and allow us to do a within-respondents comparison since we had five different versions of each experimental case.

4 Results

I made a preliminary study of ten students. This results in a total of 500 data points, nested as fifty data points for each student. 55 of the responses (11%) had the incorrect interval time. 80% of those errors were with analog clocks, 80% were in the atypical start time cases, 69% were in cases where the current time as atypical, and 85% were in cases where the interval remaining was atypical. The mean error was 1.33 minutes, with a standard deviation of 14.06 and a maximum error of 48 minutes and a median error of 1 minute. Clearly, most of the errors were small with a few exceptions. For this preliminary study, I chose to ignore the errors, as the rate is not large, and the errors themselves generally small. For the rest of the analysis, then, I used only the response time as the dependent variable indicating cognitive load. The response time had a mean of 17 milliseconds, with a standard deviation of 16 milliseconds, a median of 16 milliseconds, a minimum of 4 milliseconds and a maximum of 153 milliseconds. While there is clearly some skew, the descriptive statistics looked reasonable for continuing the analysis.

I performed the analysis using mixed-effects (multilevel) modeling, creating a growth model nested within individual respondents, using the statistical language R (Pineiro & Bates, 2002). I chose a growth model since I expected there to be a learning curve effect as respondents grew used to the interface, rather than assuming that all their responses were independent (Bliese & Ployhart, 2002).

The first step in a multilevel model is to establish the validity of treating the data as nested. This consists of estimating a simple linear model of the dependent variable with no predictors, and comparing that to a nested model with no predictors. The ANOVA of this difference was significant (likelihood ratio 215 with 1 df, $p < 0.0001$), indicating that (as expected) grouping within individual was important. The ICC(1), which indicates the percentage variance in the dependent variable due to the nesting (within-subject variance) was 0.42. The ICC(2), which indicates the consistency of individual responses within the nesting (again, within-subject) was 0.97, indicating that the responses were very consistent within each individual. An examination of the individual group mean reliability using GmeanRel showed all respondents to be similarly reliable. Thus, continuing the analysis is indicated. The next step was to add the predictor variables. The time element was modeled as a simple sequence number for each question the respondents answered. Whether the clock was analog or digital was a binary value, and the prototypicality for the start time, current time, and interval of time remaining were modeled as a linear percentage difference between the nearest prototypical time and the most atypical time (7.5 minutes between prototypical times). When added, these variables resulted in significant coefficients for all predictors except for interval prototypicality. After this, each variable was added one at a time to the random effects, to determine if the model significantly improved. The only variables which significantly improved the model in this step were sequence (the timing variable, indicating that individuals got better with the survey at different rates) and analog (indicating that individuals improved reading of analog clock faces at different rates). Further exploration for interaction effects between types of prototypicality, learning, and analog/digital did not improve the model. The final model is summarized in Table 2. The coefficients can be interpreted as the change in response time, in milliseconds, for each parameter. Thus, a prototypical start time will reduce the response time by 4.4 milliseconds, and an analog clock face increases the response time by 6.9 milliseconds. A higher response time indicates a higher cognitive load.

To review our hypotheses, H1 claimed that analog clock faces would reduce cognitive load, which is clearly not supported by this study, as the coefficient for the analog faces is positive. H2 and H3 claimed that there would be an interaction effect in which lower prototypicality would result in higher cognitive load. Since the interactions of the terms did not significantly improve the model, these two hypotheses are not supported.

Finally, H4 predicted that, overall, more atypical times would increase cognitive load. This hypothesis is supported, with significant coefficients for start times and current times, although the interval of time remaining is not significant.

Table 2. Final Model Parameters

Fixed Effects			
Predictor	Coefficient	t-statistic	p-value
Time	-0.2380	-2.84	0.0047
Prototypicality of Start Time	-4.3614	-3.60	0.0003
Prototypicality of Current Time	-3.4489	-2.81	0.0052
Prototypicality of Time Remaining	-1.5906	-1.34	0.1801
Analog	6.8646	3.2284	0.0013
Random Effects			
Time	Varies for each individual from -0.0552 to -0.9579		
Analog	Varies for each individual from 2.13 to 20.99		

5 Discussion, Limitations, and Conclusion

This study has not supported one of my main contentions, that analog clock faces would be easier to calculate time remaining intervals from. It is possible that this is due to a limited sample size of individuals, though that explanation is not likely. A likelier explanation is the actual form of the study. The respondents were presented with text which described their start time, and then a display which showed an image of an analog or digital clock face to indicate the current time. Effectively, they were given all digital start times, and mixed digital and analog current times. It may be that this mixture obscured the effect that I expected to see. As the 50 questions were presented to the subjects in a random order mixing digital and analog clock faces, respondents may have done significant conversion between analog and digital faces, which would not be the usual habit in the workplace. A followup study in which both start and current times are presented by the appropriate clock faces might yield different results, as might a study in which one-half of the respondents see only digital clock faces, while the other half see analog clock faces.

On the other hand, the other main contention was that not all atypical times are created equal. The more atypical a time is, the more it impacts the cognitive load. Thus, simply replacing analog clocks with digital clocks may ameliorate the problem of atypical times, but it will not eliminate them. The combination of the effects from atypical start time and atypical current time is actually larger than the effect due to analog faces. These results clearly show that further research is needed, and has real potential to clarify these effects.. The case is not completely closed on analog clocks, and interruptions outside of prototypical times will remain a problem even with installation of digital clocks.

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*INTELLECTUAL CAPITAL INVESTMENTS: ANALYSIS OF THE PREDICTED
OUTCOMES*

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Abstract

Purpose of the article The paper aimed to reflect the results of the survey “Intellectual Capital Investments in Latvia” that was conducted in March – October 2015. The overwhelming research goals were (1) to evaluate Latvian entrepreneurs’ understanding about the concept of intellectual capital investments, and (2) to define factors affecting the level of intellectual capital investments in the Latvian business environment.

Methodology/methods The survey among 203 respondents, representing different sectors of Latvian economy, was conducted, using the questionnaire specially designed for research purposes. Latvian entrepreneurs were offered to evaluate the pre-formulated outcomes from IC investments in according to their subjective perceived importance of each, using 4-point scale. The received data was processed, applying such methods, as analysis of means, ranking and principal components analysis (PCA), in SPSS 19.0 environment.

Scientific aim Scientific aim of the paper is to fill the gap in literature regarding the concept of intellectual capital investments. Despite the huge number of IC-related papers, the term “intellectual capital investments” is not so popular among the researchers. In the given paper the authors focused on predicted outcomes from intellectual capital investments and on the importance of these outcomes, perceived by the surveyed Latvian entrepreneurs.

Findings Profit growth was evaluated by Latvian entrepreneurs as the most important predicted outcome from IC investments. However, customer satisfaction was also rated among the important ones. The PCA yielded four components, namely intangible outcomes, financials, efficiency and employees value.

Conclusions Despite the fact that financial outcome was prioritised, non-financial outcomes were also highly rated by most of respondents. Considering that research sample was limited by the number of respondents and represented sectors, the survey could be iterated in another business environment. Besides, the revealed components could involve more predetermined items to test the reliability of the received results.

Keywords: intellectual capital investments, predicted outcomes, survey, Latvia

JEL Classification: C38, O34

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Introduction

Intellectual capital (IC) is considered to be a one of the key value contributors in a company (Cheng et al 2010; Elsetouhi and Elbeltagi, 2011). Through a proper intellectual capital management a company can achieve a sustainable competitive advantage „in a world where knowledge means efficiency, innovation and faster decision-making” (Maclean, 2001). Based on Sofian et al (2006, p. 17), IC-based companies „are more likely to perform highly in terms of industry leadership, competitiveness, and new product development.”

The concept of Intellectual capital is related to various concepts, such as corporate reputation, research and development (R&D), employees' knowledge and competence. Due to the multidimensional nature of the concept there is no consistent approach to measuring of intellectual capital value and understanding of the term “intellectual capital investments”.

In the current paper the authors focus on the potential outcomes from investments into intellectual capital. This research, in turn, is a part of the comprehensive study “Intellectual Capital Investments in Latvia”. Reviewing the list of IC-related papers, published by local researchers (Sennikova and Kurovs, 2006; Grundspenskis, 2007; Purgailis and Zaksa, 2012; Brenca and Garleja, 2013; Berzkalne and Zalgale, 2014), it is obvious that different authors highlighted different aspects of IC, but the topic of IC investments was studied primarily in the earlier papers, published by the authors of the current research (Lentjusenkovs and Lapina, 2015a, 2015b, 2015c, 2014). This, in turn, indicates the need for in-deep further investigation.

The goal of the study was to evaluate the role of IC investments, as well as to define the factors affecting the level of IC investments in Latvian companies. The current research was aimed to evaluate the importance of the potential outcomes from IC investments, perceived by Latvian entrepreneurs.

The authors' stated hypothesis is, as follows:

H1: financial outcomes are the most important predicted outcomes from IC investments for Latvian entrepreneurs.

To achieve the established goal and to test the research hypothesis, 203 Latvian entrepreneurs were surveyed in 2015. They were offered to evaluate the pre-formulated outcomes from IC investments in according to their subjective perceived importance of each, using 4-point scale.

The received data was processed, applying such methods, as analysis of means, ranking and principal components analysis (PCA), in SPSS 19.0 environment.

Profit growth was evaluated by Latvian entrepreneurs as the most important predicted outcome from IC investments. However, customer satisfaction was also rated among the important ones. The PCA yielded four components, namely intangible outcomes, financials, efficiency and employees value.

The current study contributes to the literature on investigation of intellectual capital investments in Latvia and provides a basis for related studies in the field.

1 The core of intellectual capital and intellectual capital investments

The term “Intellectual capital” has been defined in different ways. Some researchers made an attempt to propose comprehensive definitions, such as one offered by The Danish Trade and Industry Development Council (1997): [Intellectual capital referred to] “assets related to the employee knowledge and expertise, the customer confidence in the company and its products, the company infrastructure, not least in the form of IT systems and administrative procedures, and the efficiency of the company's business processes.” Others defined the term of intellectual capital very short, for instance “IC is the sum of all knowledge-based intangibles.” (Garcia-Zambrano et al, 2013, p. 165).

As for IC structure, many scholars demonstrated a consensus of opinions and divided IC into three main components: human capital, structural capital and relational capital (Johnson, 1999; Bontis et al, 2000; Chen et al, 2005). Human capital is defined as the knowledge, talents and experience of employees (Stewart, 2001). Structural capital is the stock of knowledge that has been converted to the information that exists within an organization's structures, systems, and databases (Stewart, 1997). Relational capital is referred to the knowledge that is contained within the organization's relationships with internal and external stakeholders (Bontis, 2002).

Studying the concept of intellectual capital investments, there is also no consistent approach to definition of the term in the scientific literature. Considering the multidimensionality of the concept of intellectual capital, the choice of one “proper” definition becomes meaningless.

Some researchers define IC investments as different types of company's expenditures, such as “employer funded training, software, R&D, reputation and branding, design, and business process development” (Awano et al, 2010, p. 66). Most of experts link IC investments with R&D costs (Liebovitz and Suen, 2000; Coombs and

Bierly, 2006; Bandeira and Afonso, 2010). Advertising costs are also frequently used as proxy for IC investments (Klock and Megna, 2000).

Some authors proposed the definitions of IC investments, based on IC component definition. For instance, Bontis and Fitzens (2002) defined human capital investments as "the investment by organizations in the development of employees' knowledge and skills through training and development initiatives." Definitions of human capital investments could be find in many scientific papers (Ballester et al, 2002; Komnenic and Pokrajcic, 2012; Sleezer et al, 2012; Lajili and Zeghal, 2006).

During the last decade the researchers have been focused on the investigation of the link between intellectual capital and a company's value creation. So, the IC investments in the recent academic literature frequently are referred to value factors (Chen et al, 2005; Maria Diez et al, 2010; Dumay, 2012).

Different researchers mentioned in their studies potential outcomes from the intellectual capital investments, such as:

- Profit growth, increase of return, cost reduction in the future (Bontis et al, 2000; Lajili and Zeghal, 2006)
- Market share growth (Sydler et al, 2013)
- Productivity growth (Komnenic and Pokrajcic, 2012; Almeida and Carneiro, 2009)
- Business value enhancement (Zabala et al, 2005; Dumay, 2012)
- Strengthening collaboration with partners (Sullivan, 1998)
- Customer and staff loyalty growth (Corrado et al, 2009)
- Improvements in staff qualification (Bontis and Fitz-Enz, 2002; Jalava et al, 2007)
- Customer satisfaction growth (Sullivan, 1998)

This list of potential outcomes from IC investments was used in the questionnaire.

2 Methodology: research instrument, sample and data processing methods

The main method to achieve the research objective was a survey, using the questionnaire, developed by Lentjusenkova and Lapina (2015b). The questionnaire involved two parts: (1) six respondent profile questions, and (2) eight conceptual questions:

In the current study the authors analysed the data obtained from Q6 "Expected results from intellectual capital investments". Respondents were offered to evaluate 13 potential outcomes from IC investments according to their perceived importance.

The list of results offered to the respondents for evaluation was formed, based on the literature in the related field. The potential outcomes were grouped into two groups: (1) financial outcomes, and (2) non-financial outcomes (Table 1).

Table 1 Financial and non-financial outcomes from IC investments

Financial outcomes	Non-financial outcomes
Profit growth	Company's infrastructure improvement
Market share increase	Reputation and brand value enhancement
Cost reduction in the future	Strengthening of collaboration with partners
Productivity growth	Employees loyalty growth
Return growth	Employees qualification improvement
Company's value enhancement	Customer loyalty growth
	Customer satisfaction growth

To evaluate the importance of potential outcomes from IC investments, respondents used 4-points scale, where "1" – indicated "the most important outcome", while "4" meant "the least important outcome".

To test the research hypothesis, all the outcomes were ranked according to the average value of rates assigned by the respondents. The lowest average value in the list indicated the highest perceived importance, and vice versa.

For grouping of the outcomes Principle Component Analysis (PCA) with Varimax rotation procedure was performed in SPSS 19.0 environment.

To examine the appropriateness of the analysis, Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy (KMO) and Bartlett's Test of Sphericity were used. To make a decision critical value for KMO equal to 0.5 was stated. In turn, the value of Bartlett's Test of Sphericity was considered as a statistically significant at 0.01 level.

For the research purposes 203 respondents – top managers and owners of Latvian companies operating in different sectors – were surveyed. Based on the data of the Central Statistical Bureau, the number of commercial companies in Latvia was 91476 (CSB, 2015). At the confidence level 95% and with the confidence interval 7%, sample size needed is 196 companies. The most respondents represented service sector (57.7%). Production sector, sales sector and construction sector were represented by 19.7%, 20.2% and 2.4%, respectively.

28% of represented companies can be classified as micro companies with number of employed persons less than 9 employees. Big companies with more than 250 employees were represented by only 14% of respondents. The most of the respondents were from small and medium-sized enterprises (SME) – 58% of a whole sample.

As for business volume, the most of the companies (56%) were those with annual turnover less than 2 mln Euro. Companies in the range between 2 mln Euro and 50 mln Euro were represented by 37% of respondents.

Latvian business environment in Riga and outside has a range of specific features. That is why one of the respondent profile criteria was a location of a company with two alternatives: (1) Riga (the capital of Latvia) and (2) regions. Number of respondents within two groups was almost equal: 58% of respondents represented companies located in Riga, and 42% - others.

3 Research results

To detect the most important results from the investments into intellectual capital all the outcomes were ranked in the ascending order according to the mean value of all the evaluations provided by the respondents. The results are summarized in the Table 2.

Table 2 Perceived importance of the outcomes from IC investments

Outcome	Perceived importance	Number of respondents rated the outcome with 3 or 4 points
Profit growth	1,2512	2,96%
Customer satisfaction	1,3498	3,94%
Market share increase	1,5468	8,37%
Productivity growth	1,5911	3,94%
Return growth	1,6158	3,94%
Staff qualification improvement	1,6256	6,40%
Company's value enhancement	1,7537	6,90%
Cost reduction	1,8276	8,37%
Customer loyalty	1,8916	11,82%
Reputation	1,9113	12,81%
Infrastructure improvement	1,9557	16,75%
Staff loyalty	2,0296	20,69%
Collaboration	2,1429	30,54%

Source: authors' calculation

The most important outcome from the viewpoint of respondents is profit growth that, in turn, confirms the stated hypothesis. However, the respondents also highly evaluated customer satisfaction. Actually all the outcomes were highly evaluated by the respondents (see the last column).

The next stage of data processing is factor analysis. To examine the appropriateness of factor analysis, Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) and Bartlett's Test of Sphericity were used. KMO =

0.718 > 0.5, which indicates above-average adequacy. P-value of Bartlett's Test of Sphericity = 0.000 < 0.05, which points to high appropriateness of factor analysis to the given sample.

Factor analysis was performed by means of SPSS 19.0 software. Principle component analysis (PCA) with Varimax rotation procedure was applied. Following the experience of other researchers, the only variables with factor loadings over 0.5 were retained (Abdullah et al, 2010). Those with loading on more than one factor also were removed from the list.

The results of the first stage of factor analysis are summarized in the Table 3. PCA with Varimax rotation yielded 4 components.

Table 3 Rotated component matrix (stage 1; Rotation converged in 6 iterations)

Outcome	Component 1	Component 2	Component 3	Component 4
Reputation	0.790			
Collaboration	0.789			
Customer loyalty	0.604			
Productivity growth		0.811		
Return growth		0.702		
Cost reduction		0.641		
Company's value enhancement	0.519	0.599		
Profit growth			0.802	
Market share increase			0.723	
Customer satisfaction			0.621	
Staff qualification improvement				0.866
Staff loyalty				0.715
Infrastructure improvement				

Source: authors' calculation

The results point to the necessity remove from the scale the elements "Company's value enhancement" and "Infrastructure improvement". In the first case, the element is assigned to two factors simultaneously. The latter element has no factor loadings over 0.5. This result pointed to the necessity to iterate the procedure after removing these two elements.

In the second stage of factor analysis KMO value was equal to 0.648 that is still satisfactory level. Bartlett's Test of Sphericity Sig. = 0.000. The results are summarized in the Table 4.

Table 4 Rotated component matrix (stage 2; Rotation converged in 5 iterations.)

Outcome	Component 1	Component 2	Component 3	Component 4
Collaboration	,821			
Reputation	,812			
Customer loyalty	,577			
Profit growth		,815		
Market share increase		,743		
Customer satisfaction		,587		
Productivity growth			,828	
Return growth			,753	
Cost reduction			,646	

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Staff qualification improvement	,893
Staff loyalty	,647

Source: authors' calculation

In the result of the second stage of PCA, the items converged on four components (factors). The components were named by the authors, as follows.

Component 1: *Intangible outcomes*. The outcomes within the first group are associated with intangible assets of a company: partner relationships, brand value and customer value.

Component 2: *Financials*. The second component involves financial outcomes. There is one non-financial outcome within the group. However, it just confirms the fact that customer satisfaction is a major contribution to sustainable profit growth.

Component 3: *Efficiency*. The outcomes within the 3rd group are referred to the efficient usage of resources or, in this particular case, to efficient investment of money to achieve better financial results.

Component 4: *Employee value*. The items of the 4th group are referred to Human capital quality. The quality of human capital in a company is determined by employees' contribution to value creation process. This, in turn, depends on staff competence and loyalty.

4 Discussion

The current paper reflects the results of the study that is just a part of a bigger research dedicated to the IC investments issues in Latvian business environment. This, in turn, diminishes the value of findings, because it is impossible to see a "big picture". Besides, the survey sample is limited by only four sectors of Latvian economy.

However, the survey results allow making some interesting conclusions. For instance, the most important outcome from IC investments in respondents' opinion is "profit growth". "Value enhancement" takes only the 7th place. But, according to research results conducted by Deloitte, revenue growth is one of the key drivers of company's shareholder value (Lukac and Frazier, 2012).

Despite the fact that financial outcome was prioritised (Table 2), non-financial outcomes were also highly rated by most of respondents. Customer satisfaction and staff qualification improvement were evaluated as non-important only by 3.94% and 6.40% of respondents, respectively.

Principal component analysis yielded four components, named by the authors "intangible outcomes", "financials", "efficiency" and "employee value". The outcomes within the second and the third components are referred to financial outcomes. The difference between these two groups can be explained based on the structure of the performance measurement system. Second group's outcomes represent a strategic level, while the third group's items – operational level. The first and last component include non-financial outcomes. However, human capital-related outcomes form the separate group that can be explained. Investments into employees training programmes and financing personnel motivation programmes increase staff satisfaction, that, in turn, positively influences staff turnover. Loyal employees are important value drivers for any company due to their higher contribution to customer satisfaction and supporting corporate brand value. Besides, high staff retention level means lower training costs for newly-employed persons.

The results of the current study will be linked to the "big" survey results. Respondents' answers to all the questions will be interpreted to provide a comprehensive viewpoint on the perception of IC investments in the Latvian companies.

The research was limited with the number of respondents and the represented sectors of Latvian economy. It would be interesting challenge to enlarge the sample with more representatives of Latvian companies.

Conclusion

The present study was aimed to investigate Latvian entrepreneurs' perception of financial and non-financial outcomes from investments into intellectual capital.

Survey conducted among 203 top executives and owners of Latvian companies representing different sector of economy revealed the fact that the most important outcomes from IC investments are profit growth and customer satisfaction. The least important outcomes are staff loyalty increase and strengthening of collaboration with partners.

The stated research hypothesis "*financial outcomes are the most important predicted outcomes from IC investments for Latvian entrepreneurs*" was confirmed.

However, non-financial outcomes were also evaluated with high rates. Based the conclusion on the number of respondents evaluated the outcomes as “non important” (rates “3” and “4”), very important outcomes for Latvian entrepreneurs are also “productivity growth”, “return growth”, “staff qualification improvement” and “company’s value enhancement” (Table 2).

To test the reliability of the results, it is possible to conduct the survey, using larger sample and increasing the number of represented business sectors. Besides, the number of predetermined outcomes can be increased, based on the structure of the revealed components.

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*TALENT MANAGEMENT IN THE UNITED ARAB EMIRATES: LOCAL AND
EXPATRIATE PERSPECTIVES.*

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Abstract

Purpose of the article Academic debates on TM generally portray GCC countries as less advanced. This paper seeks to understand why TM is not so well-known and is less systematically implemented in the United Arab Emirates (UAE).

Methodology/methods Individual interviews were conducted with 84 people to explore TM in public and private sector organisations in the UAE. 15-16 interviews were held in each of four case study organizations (total 63 interviews) and 21 interviews with a range of TM stakeholders, such as government officials and known TM opinion leaders.

30 of the transcripts were selected for open and selective coding. All of the 21 TM stakeholders were analyzed along with a further 9 transcripts selected from the four case studies. The transcripts were open coded by the first author using NVIVO 10. This paper reports an interpretation of the 455 open codes and research memos developed at what is an advanced stage of the open and selective coding phases.

Scientific aim TM theories are predominantly concerned with how employees' talents can be deployed to the competitive advantage of the employing organization with positive outcomes for employees. This paper is concerned with broadening the debates on to other stakeholders in TM processes, especially, countries, governments, education, and families.

Findings TM as it is conceptualized and practiced in the UAE is inextricably linked to issues of employment localization, often known in the UAE as nationalization or Emiratization. TM has been organized and implemented differently for two labour markets across all sectors of employment; the country's nationals and the expatriate workforce.

Conclusions The extent that TM develops in the UAE similar to Western countries depends on how much the implementation of policies for Emiratization and expatriate workforce development are found to be compatible.

Keywords: Talent Management, TM Policies, Emiratization, Expatriate Labour, Stories, UAE, GCC.

JEL Classification: M15, M21

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Introduction

During the last two decades, academics and management practitioners have published a number of models and frameworks for talent management (TM). In our literature review we select a few of some of the more highly cited publications on TM, but concentrate our reader's attention on the national rather than the organizational level of analysis. While it is important to acknowledge that this review critiques the TM opus outside of its intended principal organizational scope, we will argue that such distancing is important if future TM research is to become more sensitive to local and national workforce and employment perspectives. The growth of theoretical literature on TM started in the late 1990s as a relatively uncomplicated debate on the "war for talent" between corporate organizations seeking to gain a sustained competitive advantage (Chambers et al, 1998; Morris and Pinnington, 2002). TM has been influential in the practitioner press and media, and as it later became apparent that TM was more than a passing fad (Iles, Preece and Chuai, 2010), several groups of academics subsequently responded positively to the demand for more TM thinking. During the last decade, scholars sought to elaborate the idea of TM developing its conceptual reach into mainstream disciplines such as economics, international business, strategy, management and human resource management (HRM).

1 TM and its implications for national governments and communities

In debates amongst researchers, TM has been integrated with concepts from corporate strategy and strategic human resource management (SHRM). Lewis and Heckman (2006) recommend TM is implemented in organizations by adopting a systems view so that it can become more influential on the strategic management of talent. They argue that over the last few years much of what was talked about as TM was based on existing practices in HRM, succession planning and employee assessment & development ("A, B & C" players). They recommend development of TM in the areas of strategy (sustainable competitive advantage, implications for talented employees, talent pools), systems and practices. Interestingly, these authors observe that much of the variation in HR practices relates to differences in competitive climates, geographical regions and socio-economic "variables". These regional contexts have been studied extensively in the international business (IB) and international human resource management (IHRM) literatures and in relation to multinational organizations are often termed 'host country characteristics.' An array of varied institutional arrangements exist between countries influencing employment, and multinational corporations (MNCs) often have to respond to these differences (Kynighou, 2012). Employment, and to some degree TM, is accordingly influenced by a large number of factors including, variation in labour market regulations, industrial relations systems, production systems, education and training arrangements and their associated career structures, social stratification and standards of living, welfare arrangements, and household, family and gender systems (Grimshaw, Rubery and Almond, 2015, p. 193).

The HR architecture and TM systems of a global MNC have the potential to support governments' policy goals of nationalization, whenever they are perceived by executives to be consistent with the organization's strategy. Talent pools, TM systems and TM practices all offer organizational infrastructure for HRM approaches that support nationalization. Even so, their efficacy depends on management and employees' attitudes, as to whether or not they are used productively or are deployed in various ways that impede nationalization. Collings and Mellahi's (2009) concept of 'pivotal positions' highlights the ambivalent relationship that TM may have with nationalization. A pivotal position in the organization is one essential for sustainable competitive advantage. Collings and Mellahi argue that pivotal positions draw from the organization's talent pool, which is a combination of human resources from the internal and external labour markets. In some MNC subsidiaries, it is likely that conflict will arise periodically relating to different corporate and government preferences for candidates deemed most suitable for occupying the role in specific pivotal positions. This however is not a rare phenomenon in the IHRM literature where it is often observed by researchers that government representatives sometimes advocate formally, or informally suggest, particular levels or quotas of managers and other employees who are from the host country (Edwards, 2015, p. 82-86).

In their theoretical model of strategic TM (Fig. 1, p. 306) Collings and Mellahi propose that the construct of pivotal positions is related to a set of HR and organizational performance outcome variables. They utilize the AMO framework that assumes employee performance is a function principally of ability, motivation and opportunity (Boselie, Detz and Boon, 2005) and they specify work motivation, organizational commitment and extra-role behaviour as key employee outcome variables. These outcomes are assumed to impact on firm performance as the ultimate outcome of strategic TM. Since policy makers in national governments often seek to sustain successful domestic markets, attract foreign investment and be a popular host country for MNC's subsidiaries, these firm performance outcomes are significant. However, firms' performance is not the exclusive strategic aim for national governments that have to pursue a diversity of political, economic, social and cultural goals, such as the employment and employability of the national workforce. These workforce and population

goals of government policy require various forms of audit, assessment and evaluation that are not captured comprehensively in available TM systems and measurement tools. Beechler and Woodward (2009) argue that the “war for talent” metaphor is uncreative and sometimes will be counter-productive leading to TM failure. Their model of talent dimensions (Fig. 1, p. 283) presents a range of areas of change in the global environment (global trends, mobility, business transformation and diversity) significant to both institutional and organizational actors. These are a notably broader set of issues than are presented as inputs and contexts in many other frameworks of TM. Beechler and Woodward’s list of issues are significant at multiple levels (societies, governments, corporations, individuals) and important considerations for many areas of TM policy and practice. These have the potential, they argue, to engender ‘scarcity’ and ‘creative’ TM responses by organizations. While it is reasonable to assume both response types will coexist in many organizations, Beechler and Woodward’s creative ‘talent solutions’ begin to identify areas of mutual benefit for national governments and MNC subsidiaries, such as cooperative and generative partnerships, innovative approaches, broad and deep talent.

National governments have much to gain from becoming and remaining a country destination of choice for talented labour. There are many areas of TM and Global TM (GTM) that can be utilized to the benefit of governments and countries. The traditional legacy areas of TM–HRM practices, succession planning and employee assessment & development—are important to governments as well as organizations whenever they raise the quality of labour, contribute to higher levels of employment and improve employability. The strategic management of talent in organizations is important for governments because the creation and management of talent pools facilitates the efficient deployment of training and development resources contributing to the optimization of the productivity of the workforce (Pinnington, Debrah and Rees, 2015). TM systems, as was noted earlier, have the potential to support government policies whenever they are consistent with organizations’ corporate and business strategies. Talent pools, TM systems and TM practices can all contribute to government policy goals. Likewise, TM that leads to committed and motivated employees and contributes to high performance in organizations are principal social and economic aims of governments.

Organizational frameworks of GTM are relevant to government policy makers not least because they highlight societal and labour issues—globalization, workforce demographics, demand and supply—important to their countries. Where executives and employees in MNC subsidiaries and other organizations are influenced by these frameworks, then they are more likely to enter into relevant dialogue with other stakeholders on matters such as national culture, economic conditions, and workforce characteristics. Governments and corporations have mutual interests in understanding global flows of talent and appreciating host country characteristics important to the effective management of knowledge and skills in the workforce (Pinnington and Sandberg, 2014). As Beechler and Woodward (2009, p. 282) observe: “.. *changes are occurring that will continue to impact labor and talent From unrelenting global demographic and economic forces to the increasing mobility of people and organizations, the business environment is more demanding and complex. There are knowledge-driven industry transformations as well as cultural changes There is much wider diversity in culture, gender, working generations and modes of employment than ever before.*” Moreover, in these dynamic environments both parties normally will want to avoid TM failures and poor business performance due to their deleterious effects on economies and organizations.

Sidani and Al Ariss (2014) report an empirical study of TM in GCC countries that found TM faces a number of institutional pressures and organisational challenges that are not typical of TM in, for example, Western countries. Ultimately, organisations operating in the Middle East region still face the same competition for talented workers. They have to compete for talent globally and must attain a sustainable strategic balance of differing demands arising from processes of local adaptation and global assimilation. Sidani and Al Ariss conclude from their study that companies operating in the GCC resort to various measures such as establishing outsourced companies that are not incorporated in audits of the number and proportion of nationals employed in their organisations, hire locals to non-key positions, and implement a two-tier system for all aspects of performance management (e.g. appraisal, development and rewards) of expatriates and locals.

There is evidence within the literature on TM and MNCs that academic researchers and practitioners could contribute more to the development of frameworks that assist national governments to manage talent in their countries. First, few if any frameworks are available that are adequately informative on TM and GTM from the country level perspective. Second, there is an opportunity for scholars to develop theory in this important area of government policy. It should be more inclusive of TM theorizing and practices at a “middle-range” level between economic models on the one hand and organization-centric models on the other hand.

2 Methodology

2.1 Research design and sample

The research was conducted in three stages. A review of the academic and practitioner literature on TM in general and specifically in relation to the UAE. Then, 15-16 interviews were held in each of four case study organizations (total 63 interviews). Lastly, 21 interviews were held with a diverse range of TM stakeholders, such as government officials, employer representatives, NGOs, professionals and consultants, politicians and known TM opinion leaders. The four case study organizations were all large employers and based in key areas of the UAE economy in terms of creating employment and adding value: a public sector organization, a semi-government organization, and two private sector organizations in banking and finance, and in construction and real estate. They were selected based on the knowledge of the researchers and expectation that they would reveal good practice in TM as well as challenges. The interview participants were from different hierarchical levels and management functions, in addition, others were chosen because they had roles and responsibilities specifically for TM. Consequently, we interviewed key organizational actors including the senior managers, human resource managers, line managers and employees.

2.2 Primary data collection and analysis

The data were collected by the first author and a team of 5 full-time HR practitioners who were studying part-time for an MSc in HRM and spoke Arabic and English. Interviewees were given the option of speaking in either language. The semi-structured interviews were digitally recorded and transcribed in both Arabic and English. Then, the data were analyzed for themes and written-up in a report to the FDC, academic conference papers presented and several MSc in HRM dissertations completed.

Subsequently, the transcript data have been re-analysed by the first author and principal investigator, coding the data following grounded methods (Charmaz 2014; Corbin & Strauss, 2015; Glaser 1978; Glaser & Strauss, 1967) entering it into NVIVO 10.30 of the transcripts were selected for open and selective coding. All of the 21 experts group were analyzed along with a further 9 transcripts from the four case studies. The additional transcripts were selected and evaluated after writing up the case analyses and the report to the funding body. These 10 transcripts were selected based on the assessment that they were particularly knowledgeable or expressive of strong views and opinions on TM. The transcripts were read intensively and open coded by the first author using NVIVO 10. This conference paper reports an interpretation of the set of 455 open codes and research memos developed at what is an advanced stage of the open and selective coding phases of the research. These formative results are therefore a draft report and prior to completion of the qualitative research processes of theoretical coding and writing up final narratives of the core categories.

3 Results

Stories were told about families and their influences on the development of people's talents. Parents should encourage their children to develop a strong work ethic, develop their skills to the full inside and outside of school, and be ambitious about their career futures. Families figured strongly in stories about women's development and work careers being blocked primarily by male members not wanting them to work or over-dominating in particular decisions related to women's choice of careers, occupations and their involvement in paid employment. Issues were related such as balancing work and family, with women quitting jobs to resolve problems, and family restrictions on women travelling. The criticality of school education for the development of talent was emphasized, largely from the negative aspects of what schools were felt to be failing to achieve. In the accounts given about the role of schools in talent development, the majority of stories were about how there should be more involvement of industry and business organizations in the classroom and more opportunities for work internships and visits. The role of schools in preparing children for the anticipated future needs of the country's labour markets was emphasized. It was suggested by some that the UAE Government can do a lot to improve the development of talent in the UAE education system. This includes programs for learning about talent management and talent development, improved careers advice and counselling, more focused provision of subjects important to the UAE economy, and increased activity in areas such as English Language training for communication in global workplaces.

One of the areas of narrative commonality in the stories related by many of our research participants was the importance of policy direction. While groups of participants held very different views on exactly what the policies for TM should cover, there was a consensus expressed about the need for a unified set of policies. It was explained how these should be designed so that they are beneficial to the country's economy and capable of resolving differences between central, federal and local governments. On the topics of talent development and

movement of talent within, and between, private sector and public sector organizations, participants from both sectors advocated increased establishment of institutions and specialist groups on TM. Their purpose would be to influence and inform policy directions relating to TM. Their activities would include sharing information within sectors designed to increase the amount of consultation with government, school and higher education organizations, and groups of employers in specific industries. While several groups have been in operation over the last 20 years for talent development, it was explained by those who knew about them that overall these organizations lacked sufficient political influence in their chosen areas of policy intent.

Alongside the concern for policy development that is supportive of TM and coordinated in the interests of the country and society, participants' accounts of TM were replete with examples and opinions about the limited diffusion of talent management policies and practices in organizations in the Middle East. TM and succession planning are not commonly practiced in the Middle East region. The UAE and other GCC countries are characterized by expatriate labour mobility based on different pay rates in organizations. One surprising result from this large research study of TM in the UAE was the comparatively limited amount of talk about expatriate labour shortages and turnover. Since its initial consultancy formulation in McKinsey & Co., TM has been vaunted as an effective way of managing people and ensuring competitive success. Whereas our interview participants from multinationals situated TM within the needs of the global corporation and in the specific country context of the UAE, mentioning difficulties of recruitment and retainment often related to changing economic relativities with the expatriates' countries of origins, they did not often emphasize ways that TM must be designed and implemented to improve these situations. Our sample included a number of policy makers, consultants and employed specialists in line management, HRM and TM, and their accounts of TM demonstrated in many cases a broad understanding of many aspects commonly debated in the academic and practitioner literatures. In the case of highly skilled global expatriates employed in the UAE for between 18 months - 3 years, they were described as generally part of a company career expatriate system for global talent comparatively unaffected by the country context. Inevitably, this can have positive and negative effects depending on the extent that the subsidiary company, industry and living community are a "destination of choice" for top global talent.

3.1 Emiratisation

The main finding of this study is that TM as it is differently conceptualized and practiced in the UAE is inextricably linked to issues of employment localization, often known in the UAE as nationalization. This might be a more significant issue in the early decades of this century than it will be in the later decades. Many of the stories told by participants were ones about the tendency for localization of employment to be an enduring theme of the first four decades following independence (2nd December 1971) and likely to be an area of significant government policy concern for some years to come. The tendency has been for TM to be organized and implemented differently for two labour markets across all sectors of employment; the country's nationals and the expatriate workforce. This was the case in all types of organization, whether local or foreign owned. The major exception would be companies that do not employ nationals, where evidently the issue of localization has not substantially impacted on the structure, systems or culture of the firm. Attitudes to Emiratisation varied substantially from some whom were keen to see it advance more rapidly and comprehensively across the economy to those who said that employment policies should not enforce organizations' compliance with the nationalisation agenda or with its specific targets and quotas. One area of common agreement was that much of the competition between the private sector and public sector for employing Emirati was non-productive. It was wasteful of resources and often damaging to the work lives and careers of many people in the country.

Interviewee 4: Look, nationalization and talent management go hand in hand, they are within the same framework, and you cannot separate nationalization from talent management. We are talking of nationalization not merely as employment, but we are talking of nationalization as empowerment. Nationalization has a big share in the strategy of empowerment taken by the UAE government. The latest initiatives, the announcement of the Nationalization Authority, and the announcements of my Chief his Highness the President of the UAE Initiative ABSHER (be Assured). These are all strategies meant to create more empowerment opportunities, to elevate nationals to a high talent Level, and to empower them to lead this economy, therefore, talent management is an integral part of nationalization.

Interviewee 1: Also, you will notice that the banking sector has been implementing a nationalization policy for a while now. The central bank had enforced that, and had stipulated a specific quota. But as far as question 11, How does nationalization works as a strategy for talent management? (I would say) Nationalization should not be just a mock; also, we shouldn't have nationalization just for the sake of nationalization. As we have looked around us on similar nationalization policies in neighboring countries, especially in the private sector, where the policy was made a mockery of, whereby, an individual goes and put his name on the company payroll, as if he works there, in return for a lump sum amount at the end of the month, and that is it.

Stories about the process of Emiratization were replete with examples of the negative effects of opportunism exhibited from all sides including employers, managers and employees. These quotes from three different interviewees illustrate how Emiratization is dependent on the involvement and motivation of all parties in ensuring localization continues to advance in ways that have positive outcomes for multiple stakeholders in the employment relationship.

Interviewee 4: *Yes there're difficulties, and the state is overcoming them. There are difficulties in the private sector in the form of (little keenness in embracing) the local talent element, and giving them the opportunity. There are also challenges on the part of the nationals themselves in their understanding of the job culture, and the need to change their mindset and build a culture.*

Interviewee 7: *We embrace it as a company ... other people find it as a burden ... something else to add to their "to-do-list".*

Interviewee 9: *And this (private sector) resistance or challenge is further deepened by the liberalization of foreign investments in the private sector, besides the lack of understanding by foreign investors to our national priorities makes it even more sharp.*

While the obstacles and difficulties with implementing localization policies such as Emiratization should not be underestimated, the overall demographics of the UAE's rapidly growing population comprising approximately 1 million UAE residents and 8 million expatriates, imply that overall there are opportunities available for planning on some aspects of the labour markets and achieving near to full employment for Emirati citizens. In this context and distinct from matters of UAE labor law, there were relatively few accounts provided of TM systems, policies and practices that apply equally to the whole workforce in organisations or sectors. The tendency has been for two separate TM systems to evolve for recruiting, motivating, developing and retaining nationals and expatriates.

The majority of the detailed accounts of TM both in foreign-owned and locally-owned international companies was about two separate systems of TM in their organisations. One major difference between foreign and locally owned companies is the external constraints on TM faced by locally-owned companies which are more subject to pressures of damage to corporate reputation. This can arise whenever locals perceive that they are not being treated favourably in a way that demonstrates loyalty to the needs of the country, such as whenever the implementation of HRM, performance management systems and activities like redundancies are seen not to discriminate between local and expatriate employees. HRM and TM specialists provided numerous accounts of how, over the last 10-15 years, many aspects of HRM and TM practice have been implemented in large organisations in the public and private sectors. These have involved, for example, assessment centres, coaching and mentoring schemes, talent pools and career development programmes for high potential employees. Many of these TM initiatives are predominantly or exclusively designed for locals, and they were described as possessing many of the hallmarks of HRM and TM initiatives in other countries that aim to achieve high employee performance. Therefore, it is feasible that over time these new TM systems will continue to develop and become more effective and influential. The extent that these systems will evolve to become more inclusive of the total workforce in organisations is unclear. The difficulties experienced in the past and present with the implementation of quotas as well as other nationalization policy goals, meant that participants tended to relate stories about what 'ought to happen' and these were often characterized by ambiguity regarding outcomes.

4 Discussion

One of the main themes arising from the interviews is that there is a lack of systematic policy and practice for TM in organizations in the context of the UAE. Based on the accounts given during our interviews, most organizations operating in the UAE have not implemented formal and systematic TM systems. An exception to this generalization is several of the foreign MNCs subsidiaries that were part of long-established systems of strategic HRM for expatriates and high potential employees. Some groups of employees were following global career paths requiring 2-3 years expatriate and inpatriate assignments in several countries and regions. All of the case study organizations had implemented some policies and practices covering different elements of TM such as: formal recruitment and selection systems, induction schemes (on-boarding programmes), identification of high potential employees, fast track and early career development programmes, mentoring, employee motivation initiatives through new reward and incentive schemes, performance management systems, employee engagement in the community, CSR and sustainability projects, employee retainment monitoring, employee development linked to performance appraisal, job rotation systems, organizational support and release for part-time study on university qualification programmes, and leadership development for managers. However, a systematic and comprehensive approach towards the management of talent was absent.

Several of the HRM policies and practices mentioned above that are consistent with TM systems and were perceived by interviewees to be working well and created a positive employee attitude towards innovation in

TM. For instance, some of the interviewees who were participating in early career development and advancement schemes spoke favourably about their influence on participants' organizational commitment and work motivation. They often then elaborated further on other development opportunities and TM initiatives that feasibly could be launched in their organizations.

As was mentioned above, the main finding that emerged out of our interviews was the relationship between Emiratisation and TM. For many of our interviewees, this was the prevailing topic for TM in the UAE. Emiratisation measures, in general, were perceived in a positive and supportive manner, however, some of the expatriate interviewees viewed Emiratisation policies as potentially threatening to their job security and promotion opportunities. They commented that nationalization measures were not based purely on principles of merit, achievement and individual performance. Whatever their views on Emiratisation, many of the participants mentioned that historically the nationalization quota systems implemented in specific industries had been misused opportunistically by employers and employees.

The interviews highlighted in particular the challenges private sector organizations are facing when it comes to meeting the Government's Emiratisation quotas and targets. Private sector organizations experience difficulties with attracting and retaining Emirati talent and there is high turnover of Emirati employees across the private sector. The lack of work experience of Emirati nationals is one of the reasons that was provided for private sector organizations not meeting quotas in more senior positions. Another reason raised by the interview participants relates to interpersonal and inter-group communication problems between the Emirati and expatriate employees, which creates additional problems with meeting the Government's Emiratisation quotas and targets. The public sector offers Emirati job seekers higher pay, benefits and better working conditions than are offered in the private sector. Also, the public sector contains a large proportion of nationals occupying management roles in contrast to the private sector. This means that the two sectors present different work environments, where the public sector is, in several respects, a more attractive location for employment of nationals.

Probably the most prevailing challenge for meeting the Government's Emiratisation quotas and targets appears to be the unwanted and largely dysfunctional inter-sectoral competition for Emirati talent between the private and the public sector. Since public sector jobs are more popular amongst Emiratis and preferred over private sector jobs, there tends to be a one-way flow from the private sector to the public sector. This one-way movement of Emirati talent between the two sectors is a problem for private sector organizations owned and directed by Emirati as much as it is for organizations run by expatriate managers. Our study revealed that the recent increases and broadening across industries of Emiratisation quotas has had the unfortunate consequence of further intensifying competition between the public and private sector to attract Emirati talent.

Conclusion

This research study shows that TM policies and practices have to be able to account for a broader set of contexts and groups of stakeholders than are used at the organizational level of analysis. Government policy solutions need to take into account the viewpoints of multiple actors, who have stakes in TM processes. In practical terms, this may mean encouraging consultation meetings, negotiations and partnerships between government organizations, corporations and other professional institutions and associations in order to identify challenges and practical solutions for TM in the context of high priority strategic agendas such as nationalization. It is likely it will also involve developing TM monitoring and benchmark systems and tools that could be offered through various media for employers, managers and employees to compare their practices against other TM standards and with reference to their competitors in the market. It is probable that some governments will want to establish partly independent TM bodies to facilitate the communication and cooperation between the state and organisations in the public, private and voluntary sectors. These can ensure dissemination of common practice by promoting example cases, training and development in TM and through providing consultancy and guidance to organisations in the early stages of their TM policy and practice.

The inter-sectoral (government-private sector) competition particular to the UAE, and some other GCC countries, can be addressed through an effective dialogue between public and private sector actors. Many of the interviewees emphasized the importance of self-regulation of organizations in the private sector, however, for empowerment of Emirati nationals and developing national talent in the UAE economy, this has to be set alongside various forms of 'soft' (Jacobsson, 2004; Kuruvilla and Verma, 2006; Sisson and Marginson, 2001) and hard regulation. Forstenlechner, Lettice and Özbilgin (2012) recommend quotas that are evidence-based rather than ideologically driven. Such a move will require close independent examination and social research on the talent pool and potential across all sectors. In particular, this study highlights the need to establish and implement quotas as measures in ways that are sensitive to inter-sectoral competition, talent pipeline issues, industry and organisational circumstances (Forstenlechner & Mellahi, 2011; Rees, Mamman & Bin Braik, 2007).

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The extent that TM develops in the UAE similar to Western countries depends partly on how much the implementation of policies for Emiratization and expatriate workforce development are found to be compatible.

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*THRIVING AND JOB SATISFACTION IN MULTICULTURAL ENVIRONMENTS
OF MNCs*

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Abstract

Purpose of the article The aim of the paper is to analyze the relationship between thriving and job satisfaction in multicultural environments of multinational corporations (MNCs).

Methodology/methods The quantitative cross-sectional study was conducted on the sample of 128 individuals from subsidiaries of various MNCs located in Poland involved in intercultural interactions.

Scientific aim The aim of this study was to examine the relationship between thriving and job satisfaction in multicultural workplaces of MNCs. It was assumed that learning is more salient than vitality in a multicultural work setting. Further, it was supposed that both components of thriving relate to overall job satisfaction and the satisfaction with intercultural interactions at work. Job tenure, job position and gender were controlled.

Findings Learning was more salient than vitality in a group of specialists and managers working in multicultural work settings. After the control for job tenure, job position and gender, it was vitality not learning that was related to their overall satisfaction. In contrast, both components of thriving were related to the participants' satisfaction with intercultural interactions

Conclusions It is probably the first study which quantitatively tests thriving in the model of intercultural interactions at work and includes job satisfaction as an outcome of thriving. The limitations concern a cross-sectional study and a convenient sample from different units and MNCs. The study contributes to the literature on job satisfaction in MNCs and cross-cultural management. It emphasizes the role of thriving in job satisfaction in the multicultural context. It shows that MNCs should hire employees who want to enhance their growth. In MNCs' multicultural environments such employees may thrive, which also helps them to be satisfied with their job. MNCs should also be concerned with employees' affective states to enhance their opportunities for learning.

Keywords: intercultural interactions, job satisfaction, learning, thriving, vitality, multinational corporations

JEL Classification: F23, M5, M14

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Introduction

Globalization is turning management into a multinational process and multinational corporations (MNCs) that establish their subsidiaries in various host economies are an evident manifestation of this phenomenon. Accordingly, more and more people are working with the representatives of different nations and intercultural interactions, i.e. contacts between individuals from a home country and other country nationals, become increasingly important in today's business (Abdul Malek & Budhwar, 2013; Groeppel-Klein, Germelmann, & Glaum, 2010). Those individuals are faced with a multicultural work environment that poses specific challenges such as e.g. a cultural and language diversity (Lauring, 2009; Tanova & Nadiri, 2010). This peculiar work context in MNCs, different from any other corporations' work context (Erez & Shokef, 2008), may impact on the quality of intercultural interactions (Roberge & van Dick, 2010; Rozkwitalska & Basinska, 2015a; Stahl, Maznevski, Voigt, & Jonsen, 2009), creating, inter alia, an ample room for learning and invigorating employees' vitality (Bartel-Radic, 2006; Davidson & James, 2009; Rozkwitalska & Basinska, 2015b). Thus employees' exposure to a multicultural work environment in MNCs may enhance their thriving.

Thriving is combined with two conscious psychological states, i.e. a sense of vitality and learning (Spreitzer, Sutcliffe, Dutton, Sonenshein, & Grant, 2005). Since the prior research proves that thriving is positively related to job satisfaction and a positive affect (Porath, Spreitzer, Gibson, & Garnett, 2012), it is positive for both individuals and their employing organizations. Moreover, as thriving is a socially embedded process (Spreitzer et al., 2005) and depends on social interactions, intercultural interactions may fuel thriving.

Job satisfaction still attracts considerable attention of scholars as it may produce positive effects for organizations and people's everyday life (Niu, 2014; Westover, 2012). Nevertheless, there is still insufficient knowledge of the role of intercultural interactions and a multicultural work context in shaping job satisfaction in MNCs (Rozkwitalska & Basinska, 2015a). Following Rozkwitalska and Basinska (2015a, p. 379), we assume that "thriving presents the mechanism of the relationship between intercultural interactions and subjective well-being" and we consider job satisfaction within the broader concept of job-related subjective well-being in hedonic and eudaimonic perspective (Huta & Waterman, 2014). Thus the aim of the paper is to analyze the relationship between thriving and job satisfaction in multicultural environments of MNCs.

The paper starts with a conceptualization of thriving and a review of the prior studies with that respect, which is followed by a definition of job satisfaction. Consequently, a theoretical model of thriving and job satisfaction in multicultural environments is depicted. Subsequently, the authors present the empirical results preceded by the hypotheses development, description of the method and the participants. The discourse is completed with discussion and conclusions.

1 Thriving and job satisfaction

1.1 Thriving at work

Thriving means that individuals experience both a sense of vitality, namely positive energy and enthusiasm, and learning that reflects their growth through acquiring new and applicable knowledge and skills. Vitality, as an energy component of thriving, is a pleasurable psychological experience in the work context and it represents its affective dimension. It mirrors aliveness, energy and high arousal job-related positive emotions. In contrast to vitality, learning represents a cognitive component of thriving (Porath et al., 2012; Spreitzer & Sutcliffe, 2007) - employees learn at work and while working with other people since learning is a socially embedded process "in the sense of relying on the interactions among people to determine what needs improving and how to do it" (Carmeli, Brueller, & Dutton, 2009, p. 81). In addition, learning fosters actualization of human potential both as an employee and as a man.

Thriving enables to look at an individual's psychological functioning and experience of growth in the work context from a new, broader perspective since it integrates both the hedonic approach that emphasizes a pleasurable experience, and eudaimonic approach, which refers to personal development and growth in the work context (Huta & Waterman, 2014). What needs to be stressed, thriving at work promotes growth since individuals play an active role in interactions with other people (Spreitzer & Sutcliffe, 2007; Spreitzer et al., 2005).

1.2 Thriving in the prior studies

Table 1 summarizes the previous research on thriving in an organizational context. To date, only a few quantitative studies on thriving have been published in an organizational context. There is also a gap in the previous research, which concerns a lack of quantitative analyses on thriving embedded in intercultural interactions in MNCs' work settings.

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The study conducted by Porath et al. (2012) demonstrates that thriving is a positive approach. The research by Niessen, Sonnentag and Sach (2012) stresses a dynamic nature of thriving among employees and that thriving is strongly embedded socially. Wallace, Butts, Johnson, Stevens and Smith (2013) demonstrated that thriving fosters innovation and depends on personal and organizational resources. Paterson, Luthans and Jeung (2014) show that thriving is associated with job performance and the supervisor's evaluation of an employee's growth. Similarly, Baruch, Grimland and Vigoda-Gadot (2014) prove that thriving supports personal growth. Carmeli and Russo (2015) emphasize the role of positive social relation in thriving. The only study that focus on thriving in multicultural environments of MNCs was conducted by Rozkwitalska and Basinska (2015b), who demonstrated that especially the learning component of thriving was enhanced in intercultural interactions.

Table 1 The previous research on thriving in organizational settings

Study	Major results	Methodology	Sample and work context
Porath et al. (2012)	Thriving positively relates to a positive affect, a learning goal orientation, a proactive personality and core self-evaluation. Thriving relates more to a positive affect than a negative one.	A cross-sectional study;	175 undergraduate students and 410 young professionals in a variety of industries
Niessen, Sonnentag, & Sach (2012)	Daily experience of positive meaning antecedences thriving. The relationships among positive meaning, knowledge and thriving are mediated by agentic work behaviors.	A diary study (five work days)	Social service sector
Wallace, Butts, Johnson, Stevens, & Smith (2013)	Thriving plays a positive indirect role between promotion focus and innovation. The employee involvement climate enhances the relationship between promotion focus and thriving, which, in turn, positively relates to innovation.	A multi-level approach	346 participants in 75 groups
Paterson, Luthans, & Jeung (2014)	Thriving relates to personal resources (e.g. psychological capital) and it is fostered by organizational resources (e.g. supportive climate).	A longitudinal design	198 dyads: employees and their supervisors
Baruch, Grimland, & Vigoda-Gadot (2014)	Professional vitality is a crucial factor for successful careers. The relationship between professional vitality and age has a curvilinear shape. Thriving supports personal growth.	Tested curvilinear relation of thriving	545 managers and professionals
Carmeli & Russo (2015)	Social relationships may help people to experience work-home enrichment, thrive and realize their full potential. Positive social relations may enhance vitality and improve capacity for learning.	A novel theoretical approach integrating the work and non-work domains	Work and non-work context
Rozkwitalska & Basinska (2015b)	Thriving people assess their specific job demands more as challenges than hindrances, activate their personal resources to face the challenges, which in return enhances their learning and personal growth. The learning component of thriving is more salient than vitality in MNCs.	A qualitative design; the Positive Organizational Scholarship framework	38 professionals working in multicultural work settings of MNCs

To summarize, the prior studies suggest that thriving relates more to a positive affect than a negative one (Porath et al., 2012) and is strengthened by personal and organizational resources. Furthermore, thriving proves to enforce both personal potential and organizational growth (Baruch et al., 2014; Paterson et al. 2014; Walles et al. 2013), occupying the central position in the model of intercultural interactions and job satisfaction (Rozkwitalska & Basinska, 2015b) and being seen as a mediator between the antecedents and outcomes (Baruch et al. 2014; Walles et al. 2013). However, still more research is needed to analyze thriving in a multicultural work environment.

1.3 Job satisfaction

Job satisfaction in a classical definition is a “*pleasurable emotional state resulting from the appraisal of one’s job*” (Locke, 1976, p. 1300) and reflects a person’s reaction to various aspects of his/her work. In literature there is a distinction between overall job satisfaction, which is usually evaluated by single-item assessment such as e.g. “In general, how satisfied are you with your job?”, and facet-specific measures of job satisfaction, which is a more cognitive assessment of various facets of the job, in the case addressed in the paper e.g. being involved in intercultural interactions. However job satisfaction is composed of affective and cognitive components (Strydom & van Eeden, 2013), which refers to hedonic perspective.

The determinants of job satisfaction can be inferred from many theories, yet the content theories and the intrinsic motivation theories appear to be the most relevant in view of our aim. According to the former, job satisfaction results from the fulfillment of employees' needs by means of their job (Strydom & van Eeden, 2013). Thus as intercultural interactions may e.g. satisfy the needs for one's positive growth and development, job satisfaction can arise (Rozkwitalska & Basinska 2015a), clearly indicating its connection with the eudaimonic perspective on employees' functioning. According to the latter, employees may experience higher job satisfaction when their job is intrinsically motivating and challenging (Huang, 2008). Therefore, intercultural interactions which are challenging may activate job satisfaction. Nevertheless, there is also evidence that job satisfaction in multicultural environments may be diminished due to e.g. conflicts or weak social integration (e.g. Froese & Peltokorpi, 2011; Stahl et al., 2009).

Rozkwitalska and Basinska (2015a) posit that the research on job satisfaction that includes multicultural environments of MNCs is rather scant and inconclusive although "*intercultural relationships play a significant role in job satisfaction*" (p. 374). To respond to these inconsistencies in the prior studies, they propose a model of intercultural interactions and job satisfaction (see par. 1.4), in which the subjective well-being construct serves as the umbrella of the cognitive and affective aspects of work, linking hedonic and eudaimonic perspectives.

1.4 Thriving and job satisfaction in multicultural environments – a theoretical model

Rozkwitalska and Basinska (2015a) developed a conceptual model of intercultural interactions and job satisfaction in MNCs, which assigns the central position to agentic behaviors and thriving. Intercultural interactions reflect a reciprocal relation between agentic behaviors and thriving at work, while job satisfaction is captured in a more cognitive than affective aspect of job-related subjective well-being.

The model was solely qualitatively tested (Rozkwitalska & Basinska, 2015b), yet the antecedents of thriving can be identified. These are individual resources such as positive psychological capital, international experience, foreign language skills and other skills and job characteristics, i.e. job demands and organizational resources. In this quantitative study the authors intend to examine a part of this model focused on the relationship between thriving and job satisfaction. Due to the fact that the theoretical model (Figure 1) focuses on intercultural interactions at work, a specific facet of job satisfaction was implemented to the analysis, namely job satisfaction with intercultural interactions, i.e. satisfaction with work in a multicultural environment.

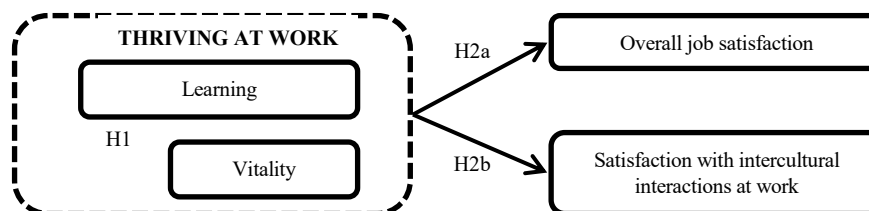


Figure 1 The model of thriving and job satisfaction embedded in the intercultural interaction at work

2 Methodology and results

2.1. Aim and hypotheses

The aim of this study was to examine the relationship between thriving and job satisfaction in multicultural environments of MNCs due to an assumption that thriving is embedded in intercultural interactions at work. The literature review states that the learning component of thriving appeared to be more salient than vitality among employees in MNCs (Rozkwitalska & Basinska 2015b), thus we assume that (see Figure 1):

Hypothesis 1: *Learning is more salient than vitality in a multicultural work setting.*

The literature review also proves that the positive social relations can develop a sense of vitality as well as an enhanced capacity for learning (Carmeli & Russo, 2015), thus we state that (see Figure 1):

Hypothesis 2: *Learning and vitality are related to overall job satisfaction (hypothesis 2a) and satisfaction with intercultural interactions at work (hypothesis 2b).*

Participants

A cross-sectional study was conducted between March and May 2015. The sample consisted of 171 individuals who work as managers and specialists in Polish subsidiaries of MNCs. The main criterion to include a participant to the study was the fact that s/he was involved in intercultural interactions both face-to-face and virtual at work. With regard to this criterion, full completed questionnaires, done voluntarily and anonymously,

were received from 128 participants aged 35 on average (SD = 8.3; range: 21–60) and with an average tenure of 6.2 years (SD = 4.8; range: 0.5 – 20 years). As far as the other characteristics are concerned, there were 62 women (49%) in the sample and 56 respondents (43%) holding managerial positions.

Instruments

The two components of thriving were evaluated separately. Vigor, an indicator of vitality, was measured by a 3-item subscale of Utrecht Work Engagement Scale (Schaufeli, Bakker, & Salanova, 2006). For example, one of the statements was: “At my work, I feel that I am bursting with energy”. Each item was rated on a seven-point scale, ranging from 0 (never) to 6 (always/every day). The average of the sum of the scores divided by the number of the items gave the level of vitality, while the higher scores indicated a higher level of vitality. In this group reliability measured by Cronbach’s alpha coefficient was good and equal to .87.

Learning was assessed by using a 5-item scale (Vandewalle, 1997). The higher scores indicated a higher level of learning. For example, one of the three statements was: “At work, I take challenging jobs in order to learn new things”. Each item was rated on a six-point scale, ranging from 1 (strongly disagree) to 6 (strongly agree). The average of the sum of the scores divided by the number of the items indicated the level of learning. The higher scores presented a higher level of learning. In this sample reliability measured by Cronbach’s alpha coefficient was good and equal to .89.

Job satisfaction was evaluated twofold: one question referred to overall job satisfaction in a corporation and one question tackled the evaluation of satisfaction with intercultural interaction at work. Overall satisfaction was measured by the statement: “Overall, I am satisfied with my work in this organization”. The answer format was from 1 (strongly disagree) to 6 (strongly agree). The higher scores indicated a higher overall job satisfaction. Satisfaction with intercultural interaction at work was assessed using the statement: “Overall, I am intrigued by the work with foreigners”. The answer format was from 1 (strongly disagree) to 6 (strongly agree). The higher scores indicated a higher satisfaction with intercultural interactions at work.

Data analysis

The data was analysed by using Statistica 10.0. In order to assess the relationship between thriving and job satisfaction, the Pearson product-moment correlation coefficient was used. In addition, Student’s t-test for paired samples was applied to calculate the differences between the two components of thriving (hypothesis 1). Regression analysis was conducted to estimate the relationship between thriving and job satisfaction. Thus regression analyses were performed separately for two outcome variables: overall satisfaction and satisfaction with intercultural interaction at work (hypotheses 2a and 2b). The model of regression included both the components of thriving as an independent variable and the control variables (job tenure, job position and gender). In order to assess the effect size of these relationships, Cohen’s f^2 was calculated. The rule of thumb indicates that Cohen’s f^2 higher than .35 is viewed as a large, .15 as a moderate, and .02 as a small effect size (Cohen, 1998).

2.2 Results

The descriptive statistics of the analysed variables and the correlational coefficients among them are presented in Table 2.

Table 2 The Pearson product-moment correlation coefficients between thriving and satisfaction

Variables	M	SD	[1]	[2]	[3]
[1] Learning	4.73	0.79			
[2] Vitality	3.73	1.21	.39**		
[3] Job satisfaction	4.8	1.00	.21*	.55**	
[4] Intercultural interaction satisfaction	5.17	0.91	.38**	.33**	.46**

Note. * $p < .05$; ** $p < .001$. M = mean; SD = standard deviation

The two components of thriving, overall job satisfaction and satisfaction with intercultural interactions correlated with one another to a various extent i.e. from weak to moderate.

The participants working in MNCs experienced thriving at work. The differences between the two components of thriving indicated that learning was significantly higher than vitality ($t = 9.68$ $df = 127$ $p < .001$),

which clearly supported the very hypothesis 1 that learning is more salient than vitality in a multicultural work setting.

Moreover, the role of the two components of thriving in job satisfaction was estimated. There were separate evaluations of job satisfaction: overall satisfaction and satisfaction with intercultural interaction at work. The details are presented in Table 3.

First, the analysis of regression for overall satisfaction was performed. After controlling for job tenure, job position and gender, vitality and learning explained 29% of variance of overall satisfaction. The relationship between vitality and overall satisfaction was significant ($\beta = .54$ $p < 0.001$), while the relationship between learning and organizational satisfaction was insignificant ($\beta = -.01$ $p > 0.05$). The effect size was moderate (Cohen's $f^2 = .45$). Thus hypothesis 2a was partly supported. Vitality yet not learning was related to overall satisfaction. It means that employees who experience higher vitality feel more satisfied with work in MNCs.

Table 3 Job satisfaction regressed on thriving (vitality and learning)

Model	<i>B</i>	<i>SE</i>	<i>t</i>	<i>Adjusted R²</i>	<i>F</i> _(5, 123)
Overall satisfaction				.29	11.14**
Intercept	3.11	0.51	6.14**		
Vitality	0.46	0.07	6.53**		
Learning	-0.01	0.11	-0.05		
Satisfaction with intercultural interaction				.18	6.68**
Intercept	3.19	0.49	6.50**		
Vitality	0.18	0.07	2.95*		
Learning	0.31	0.11	2.70*		

Note: * $p < .01$; ** $p < .001$. *B* = unstandardized regression weight; *SE* = standard error of unstandardized regression weight; *t* = Student *t*-test; adjusted R^2 = the coefficient of determination; *F* = *F*-test. Job tenure, job position and gender were controlled in the model

Subsequently, the analysis of regression for satisfaction with intercultural interactions at work was conducted. After controlling for job tenure, job position and gender, vitality and learning explained 18% of variance of satisfaction with intercultural interactions at work. The relationship between vitality and satisfaction with intercultural interactions was significant ($\beta = .24$ $p < .01$) as well as the relationship between learning and satisfaction with intercultural interactions ($\beta = .27$ $p < .01$). However, learning was in a stronger relation with satisfaction with intercultural interactions at work than vitality. The effect size was large (Cohen's $f^2 = .28$). Thus hypothesis 2b was supported. Satisfaction with intercultural interactions was related to both components of thriving, i.e. vitality and learning.

3 Discussion

The aim of this study was to examine the relationship between thriving and job satisfaction in multicultural environments of MNCs. The results have revealed that learning is more salient than vitality in a group of specialists and managers working in multicultural work settings. It was vitality not learning that was related to their overall satisfaction (a large effect size). In contrast, both components of thriving, i.e. vitality and learning were related with satisfaction with intercultural interactions of the participants (a moderate effect size).

The research has proved that learning is more salient than vitality in multicultural work settings, which is consistent with the other studies that indicate that working in MNCs and being involved in intercultural interactions is a natural source of learning (e.g. Puck, Mohr, & Rygl, 2008; Rozkwitalska & Basinska, 2015b). The benefit of learning in the face of cultural diversity enables employees to perceive barriers to interactions with others as challenges. The novelty and diversity are becoming an opportunity for learning despite the fact that they evoke positive and negative feelings (Stahl, Mäkelä, Zander, & Maznevski, 2010).

Furthermore, the research has proved that overall satisfaction is related to vitality. It means that employees who experience higher vitality feel more satisfied while working in MNCs. The authors explain this observation by means of different roles of organizational and personal characteristics in thriving. Vitality may not be based on organizational factors as much as on personal resources of employees (Paterson et al., 2014). Additionally, the authors see a meaningful explanation in the application of the hedonic perspective since when people

evaluate their satisfaction in general, the affective component can be more prominent and reflect how much they like or dislike their present jobs.

Finally, the research has shown that satisfaction with work in a multicultural environment, in contrast to overall satisfaction, is related to both components of thriving. Moreover, the relation of satisfaction with work in a multicultural environment and learning is slightly stronger than its relation with vitality. These findings have supported the socially embedded model of thriving (Spreitzer et al. 2005) and indicate that employees learn a lot when they participate in invigorating and inspiring interactions with others (Carmeli & Spreitzer, 2009). Referring to the eudaimonic perspective, the authors notice that intercultural interactions can fuel learning and lead to employees' development.

Although it is probably the first study which tested quantitatively thriving in the model of intercultural interactions at work and job satisfaction as an outcome of thriving, it has some limitations. Firstly, a cross-sectional study was conducted. The theoretical assumption based on the previous studies can support the cause-and-effect relationship between thriving at work and job satisfaction. Secondly, a convenient sample and the snowball method in the sample selection were used, which made the results restricted due to the non-representative sample. Thirdly, the participants came from different units and different MNCs, therefore a specific context of MNCs was not controlled. Taking all the above into account, it is particularly essential to respond to these limitations in future studies.

The authors' study contributes to the literature on job satisfaction in MNCs and cross-cultural management. By referring to intercultural interactions at work, it also expands the facet-specific measures of job satisfaction in MNCs. It also adds to Positive Organizational Scholarship studies since thriving in relationship with job satisfaction was investigated. Concerning the implications for practice, the study shows that MNCs should hire employees who aim at their growth. In MNCs' multicultural environments such employees may thrive, which also help them to be satisfied with their jobs. MNCs should also be concerned with employees' affective states that relate to their vitality since then managers enhance people's opportunities for learning (Porath et al., 2012).

Conclusion

To sum up, thriving is deeply rooted in social interactions at the work. According to the hedonic and eudaimonic perspectives, thriving may reveal why individuals are satisfied with their job and how they experience the optimal level of functioning in a multicultural workplace. Organizations need competent personnel and should foster thriving since it enhances the realization of employees' full potential and supports organizational development and success.

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MANAGING THE GENERATIONAL DIVERSITY IN THE ORGANIZATION

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Abstract

Purpose of the article Today's workforce is special and unique. At the first time in the history there are four generations working together in the organizations and soon representative of new generation Z will join the labor market too. Each generation brings different values, opinions, expectations, views and behaviors to the organizations. A number of researchers investigate and distinguish features of each generation. As a consequence, combined evaluation of generational differences and similarities in the context of human resource management is needed. Without this knowledge it will be impossible for any practical solutions. The focus of the paper is to review of other authors approaches to generational diversity management.

Methodology/methods In the paper was used analysis, synthesis, abstraction, induction, deduction, classification and systematization of other authors studies and researches to reveal methods of generational diversity management. It is conceptual paper.

Scientific aim is how to manage diversity of the different generations' employees at the context of human resource management?

Findings The results of the paper demonstrate that it is vital for organizations to actively take account to generational diversity in order to achieve competitive advantage, improve effectiveness. The findings demonstrate that workforce is changing and organizations have to adapt generational differences in their human resource strategies.

Conclusions Employers have to develop effective communication tools to minimize conflict, to create progressive human resource strategies to attract and retain talents and to shape management practices to enhance productivity. Lack of attention to generational diversity can cause conflicts, reduce productivity, impair communication and teamwork. The sooner employers realize importance of generational diversity management, develop and implement efficient human resource strategies at workplaces, the easier it would be to welcome new employees of generation Z in the labor market. The paper does not empirically verify the suggested model of generational diversity management, but shortly represent methodology of future research.

Keywords: generation, management, generational diversity, organization.

JEL Classification: M12, M14, M54

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Introduction

Changes in the demographic characteristics of the workforce deserve more attention from scientists and employers. According to W. Strauss and N. Howe theory, every 20 years grows new unique generation which experienced social, economic, political and cultural events at about the same point in their development (Wadee, 2013). All these events shaped generation's key characteristics and causes „*similar values, opinions and life experiences*” (D'Amato and Herzfeldt, 2008, p.931), „*worldviews, expectations*” (Glass, 2007, p.98), „*morals, dreams, desires, ambitions and styles of working*” (Bennett, Pitt and Price, 2012, p.278) of separate generations. „*Each generation usually brings to the organizations all these expectations, aspirations, values and attitudes*” (Singh and Gupta, 2015, p.1).

Current workforce consists dominantly of three generational cohorts: Baby Boomers, Generation X and Generation Y. Veterans are mostly retired and Generation Z still have not entered the working sphere (Hernaus and Vokic, 2014). For the first time ever, four generations of employees are working side by side in the same organizations. „*This is a new phenomenon and it can be argued that there is no model suitable to manage this at the strategic level within organizations*” (Bennett et al, 2012, p.278). Therefore, organizations need to have a strategy for workforce of four generations management because Z generation will come soon and will replace Veterans.

The literature on generational management can be categorized into three groups. The researches in the first category seek to disclosure the main features of each generation (Atamian and Simon, 2015; Bursch and Kelly, 2014; Fletcher et al, 2009; Glass, 2007; Jorgensen, 2003; Lyons, 2003; Murphy, 2007; Reeves and Oh, 2008; Steelcase, 2009; Tolbize, 2008; Wadee, 2013; Warner and Sandberg, 2010; Williams, Page, Petrosky and Hernandez, 2010). The researches in the second category seek to determine how the employer should behavior with representatives of each generation or how to integrate all generations for the common goals of organization (Bennett et al, 2012; Bussin and Rooy, 2013; Chen and Choi, 2008; D'Amato and Herzfeldt, 2008; Dries, Pepermans and De Kerpel, 2008; Haynes, 2011; Hernaus and Vokic, 2014; Joy and Haynes, 2011; Kultalahti and Viitala, 2013; Ling Lim, 2014; Lyons, Schweitzer, Ng and Kuron, 2012; Wong, Gardiner, Lang and Coul, 2008). It should be noted that in both mentioned categories the researchers paid little attention to generation Z. The researchers in the third category seek to demonstrate that the marketing segmentation based on the theory of generations can be an appropriate tool for sales promotion (Eastman and Liu, 2012; Howell, 2012; Schewe and Meredith 2005; Williams and Page, 2011).

In all three areas of research, scientists note that the topic of generations has a strong potential for future scientific research and most of authors (Backes-Gellner and Veen, 2009; Bennett et al, 2012; Bursch and Kelly, 2014; Grund and Westergaard-Nielsen, 2006; Murphy, 2007; Warner and Sandberg, 2010) underline the prevailing approach that the efficient management on generations in the organizations is one of the most important issue. The insights on the solution of the issue would increase the competitiveness of organizations and enhance their future prospects.

The paper provides conceptual model of generational diversity management in the organization. This model can be verified empirically, taking into account the impact for the management tools made by new generation Z who will soon come into the labor market. The research objectives are: to explore features of the generation Z; to explore the main differences between four generations belonging for nowadays workforce and their impact for human resource management; to evaluate reasonable of mixed vice versa the overall human resource management strategy.

1 Generations concept and features of their interests

A number of scientists (Kupperschmidt, 2000; Murphy, 2007; Schewe and Meredith, 2005; Strauss and Howe, 1992) stressed that belonging to generation cause growing up at about the same time, experiencing events at about the same point in their development. All these factors lead to similar values, morals and desires of each generation. Generations are unified by the same historical experiences, economic and social conditions, technological advances and other societal changes. These events influenced the development of each generation and at the same time formed the generational differences.

Employees of different generations bring various behaviors, attitudes and work values to organization. It is believed that generational characteristics affect their relationships, worldview, work ethic, inclination towards teamwork, motivators, perception of organizational hierarchy, communication preferences, how they manage change, etc. (Hernaus and Vokic, 2014). Generational diversity management for human resource managers cause new threats, but also provides with greater opportunities (Čiutienė and Railaitė, 2013): managers view differences as strengths, innovation through teamwork and collaboration (Fraone, Hartmann and McNally, 2008). „*Understanding the differences between generations relative to organizational behavioral constructs*

could result in the development of more effective human resource management strategies” (Chen and Choi, 2008, p.596).

The oldest generation in the today’s workforce is **Traditionals** (1926-1945), who retire or already retired. Traditionalists were raised in strong nuclear families where parenting was associated with discipline and strictness, have a strong commitment to their family, communities, country, view work as a privilege and have a strong work ethic. They are dedicated and persistent so many employers valued them (Bursch and Kelly, 2014). Veterans characteristics were influenced by the Great Depression and the Second World War. Representatives of this generation have been characterized as conservative and disciplined, needing respect, loyal workers, highly dedicated, averse to risk and strongly committed toward teamwork and collaboration, uncomfortable with conflicts (Tolbize, 2008). This generation lived with rationing and hardship. As a result, Veterans have a tendency to be disciplined and respectful of rules and regulations. Individuals in this generation „believe in a hard day’s work in exchange for fairness and pay. Veterans work hard because they think it is the right thing to do” (Crampton and Hodge, 2009, p.1). Traditionalists desire security and can work for the same organization all their lives.

Baby Boomers (1946-1965) „experienced growing up with rock and roll, the space race, and women’s liberation. The impact of these events shaped their personality, which tends to be optimistic, idealistic and driven” (Glass, 2007, p.99). „They were raised to believe that anything was possible, and that they could change the world” (Warner and Sandberg, 2010, p.6). They are confident in their values of justice, like to criticize others and difficulty admit their guilt. „Baby Boomers have a strong work ethic, not because they view work as a privilege as Traditionalists do, but because they are motivated by rank, wealth, and prestige” (Bursch and Kelly, 2014, p.5). They work a lot and thoroughly in order to achieve the desired results, because only hard work and sacrifice is the price for success. They „have a commitment to work that includes loyalty to the employer, they respect authority, but prefer to be viewed as equals. Baby Boomers experienced significant social and technological changes during their lifetime” (Crampton and Hodge, 2009, p.2). They are competitive, want personal gratification from the work they do, believe in self-improvement and growth (Reeves and Oh, 2008). They are target oriented, value routines, stability and dislike changes, innovations or challenges.

Generation X (1966-1985) is one of the most rebellious generations, which caused considerable upheaval in the preceding society. In childhood they had both parents working and „came home to an empty house” (Glass, 2007, p.99). They „are the children of the workaholic Baby Boom Generation and tend to feel overlooked and less appreciated. These latch-key kids were taught to be self-reliant individuals” (Crampton and Hodge, 2009, p.2). Generation X is defined as educated, positive, active and family oriented, although they were the most unsupervised (Warner and Sandberg, 2010) and misunderstood generation in history. They are very resourceful and independent. Representative of generation X „want to have fun at work. They like to work with the latest technology” (Reeves and Oh, 2008, p.301). Xers can accept criticism, apologize and admit their mistakes, but at the same time they like to remind others about their faults. Education, job, money and power are very important. They are not afraid of hard working. Xers are committed, focused on the tasks and more confident in their own work.

Members of **Generation Y** (1986-2005) are children of internet and social networks who were born in computerization zest. They grew up with access to technology from birth: cell phones, downloading music, blogging, online chatting, YouTube, iPods and the internet (Warner and Sandberg, 2010) where they developed a unique language of communication, but in reality can be timid and morose. „This generation was raised under close parental supervision. Their childhoods were scheduled down to the last minute” (Bursch and Kelly, 2014, p.9). They are educated, well-traveled, have a sense of morality and civic duty and making a lot of money is less important (Crampton and Hodge, 2009). Others opinion is very important for them: they want to please others and be better than others. They expect opportunities to grow at work. Leaders are the teachers for them. Yers are „loyal to personal goals, visions, values” (Wadee, 2013, p.48), especially believe in their potential to develop and optimistically think about tomorrow. This generation think that small actions today can change the tomorrow’s world. They crave for better life, but happy experiences valued more than material values (Pajarskaitė, 2015).

Generation Z (2006-2025) are constantly searching for new information They are interested in innovation and know where to find it. All their leisure associated with technologies. If previously all generations had different approaches, but still lived in one reality, so now these realities are different (Targamadžè *et al.*, 2015): life moved into a virtual reality. Z generation excellently owns technologies and is able to absorb the information, but is unable to cope with the emotional challenges (Pajarskaitė, 2015). Generation Z „may place more value in work experience over education” (Bursch and Kelly, 2014, p.10). They „grew up with “helicopter” parents who are very involved in their lives” (Atamian and Simon, 2015, p.2). They want to be exclusive and different. Generation Z individuals are the new conservatives, who have returned to old-school

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values such as respect, trust, and restraint. They are planned, structured, and self-controlled. „*These individuals are more conforming, less likely to take risks and engage in violence. They are a little more aware of consequences*” (Williams *et al*, 2010, p.10). Leaders have to provide knowledge, which can't be found on the Internet. They want to be equal at decision making.

„*Changes in age diversity exert a systematic effect on firm performance*” (Backes-Geller and Veen, 2009, p.1). The challenge for businesses is to use generational diversity as an opportunity and the long term advantage. „*In other words, to align the business goals with cultural norms and values of each generation so they are able to work together in harmony*” (Bennett *et al*, 2012, p.280). Organizations have to create „*new organizational cultures that value and optimize generational diversity*” (McGuire, Todnem By and Hutchings, 2007, p.593). Generations with their values, attitudes and behaviors work together at the same organizations and employers have to identify their differences and adapt human resource strategies directed to generational interests' coherence.

2 Managing the generational diversity in the organization

Diversity of workforce is gaining momentum. „Organizations are facing a more diverse set of employees and therefore they strive to find adequate human resource management policies” (Hernaus and Vokic, 2014).

STRUCTURE	TRADITIONAL GENERATION	BABY BOOMERS GENERATION	GENERATION X	GENERATION Y
RECRUITMENT	Find through advertising in newspapers and radio, look to downsizing of local companies and get in touch with their top-tiered employees.	Find through labor exchange, recruiting services, job boards, use referral programs and telephone/sourcing strategies, personnel recommendations.	Find through labor exchange, recruiting services, job search websites.	Find through adds in company's site, university or participate in career days.
DEVELOPMENT	Top developmental areas: skills training in their areas of expertise, computer training and team building. Preferred way to learn: on the job, discussion groups, peer interaction and feedback, classroom instruction-live, one-on-one job coaching, workbooks and manuals, books and reading.	Top developmental areas: skills training in their areas of expertise, leadership and computer training. Preferred way to learn: on the job, discussion groups, one-on-one coaching, classroom instruction-live, peer interaction and feedback, workbooks and manuals, books and reading	Top developmental areas: leadership, skills training in their areas of expertise and team building. Preferred way to learn: on the job, one on One coaching, peer interaction and feedback, assessment and feedback, discussion groups, classroom instruction-live, workbooks and manuals, books and reading.	Top developmental areas: leadership, problem solving, decision making and skills training in their areas of expertise. Preferred way to learn: on the job, peer interaction and feedback, discussion groups, one on coaching, assessment and feedback, classroom instruction-live, workbooks and manuals, books and reading.
MOTIVATION	Rewards for hard work and effort, tangible symbols of loyalty and commitment, respect for their experience and knowledge, give opportunity to teach others.	Rewards for achieving results, personal appreciation, promotion and recognition, give them respect and autonomy, opportunity to mentor younger workers.	Rewards for independent thinking, give them scope for personal development and growth, offer them to work as part of an integrated team and as much role freedom as possible, value balance of family and work.	Rewards for building personal competence, offer them intellectual challenges and projects, give a lot of feedback, rewards and recognition, suggest training and mentoring, ask for their opinions.
MAINTENANCE	Leadership style: directive, command and control. Leaders identify a clear direction, set long-term goals, are fair,	Leadership style: consensual, collegial. Leaders take a democratic approach, describe a vision, establish direction clearly, focus on the big picture and then let followers work out the details, show warmth and caring. Leaders should be humane.	Leadership style: everyone is the same, challenge others, ask why. Leaders are results-oriented, flexible and informal, competent, direct and straightforward, supportive of training and growth opportunities. Leaders should be credible.	Leadership style: value open, transparent, diverse leadership. Leaders are achievement-oriented, collaborative, motivational, educational, creative and positive, allow a lot of individual freedom and independence, but have to focus on setting broad and challenging targets. Leaders should have competence.

Source: Ajilon professional staffing, 2013; Atamian and Simon, 2015; Bussin and Rooy, 2013; D'Amato and Herzfeldt, 2008; Ling Lim, 2014; Murphy, 2007; NAS Recruitment, 2014; Tolbize, 2008; Warner and Sandberg, 2010

Figure 1 Model of generational diversity management

p.615). „It is so important to understand how the different generational groups prefer to be communicated with, motivated, recognized and rewarded” (Warner and Sandberg, 2010, p.2). In order to maximize the benefits of generational diversity, the main focus must be given to human resource management and to four primary activities: human resource recruitment and selection, training and development, motivation and maintenance (Sills, 2014). Summarizing generational characteristics presented in the literature, authors formed model of generational diversity management in the context of these four functions of human resource management. This model is directed to each generation on purpose to reach coherence of generational interests in the company (Figure 1). In this model, it is distinguished features of each generation: generational similarities are underlined and italicized. All generations are very similar in the function of training and development and in the other three functions we can discover only a few similar aspects between some generations. It can be argued, that for these three functions human resource managers should apply more diversified human resource management strategies. Understanding the generational differences and similarities can help human resource managers to develop strategies to attract, develop and retain talents in ways that are more relevant and appealing to each cohort (Bursch and Kelly, 2014). Employers have to change human resource policies/corporate philosophies, to ensure an environment of effective communication, to incorporate collaborative decision making and to develop internal training programs that focus on the differences of generations (Glass, 2007). „Acknowledging and accepting differences among the generations remains one of the most significant approaches in effectively managing the multi-generational workforce” (Fraone et al, 2008, p.6). „The sooner employees from all the existing generations learn to respect and accept one another the easier it would be for them to welcome generation Z employees to the new workforce” (Angeline, 2011, p.254). Employers should collect the information of generational characteristics on purpose to develop effective human resource management strategies and to be able to attract and retain key talents.

Discussion

In the dynamic and unstable business environment there is more important than ever before to take advantage of knowledge, experience and skills of different generations. But these generational differences create an important challenge to the management of the workforces at organizations. „Widespread change in the composition and shape of organizational workforces has placed increasing emphasis on understanding and managing the expectations of different generational groups” (McGuire et al, 2007, p.592). „More and more organizations are turning to experts in generational differences to help them sort out problems they are having with communication, leadership, relationships and their ability to attract and retain key talent” (Warner and Sandberg, 2010 p.8).

„Differences among generational cohorts affect an organization’s effectiveness” (Fletcher et al, 2009, p.11). Because of greater generational diversity organizations can attract and retain talented people of all ages, are more flexible, innovative and creative, can gain and maintain greater market share because their members reflect a multigenerational market, decisions are stronger because they’re broad-based with multiple perspectives (Murphy, 2007). These companies can form a better reputation, get bigger economic benefit and profit, increase customer satisfaction (Kuprytė and Salatkienė, 2011). Proper use of generational differences can increase the motivation and productivity of employees. But organizations will get all these advantages only if generational diversity manages positively. If not managed well, it can turn negative and result in poor communication, misunderstandings, exclusivity, silos and conflict. This is why it is so important to understand generational differences in communication, motivation, recognition and rewarding (Warner and Sandberg, 2010). Organizations often struggle between retaining the valuable skills and knowledge of older employees or offering an attractive environment for younger employees. This struggle could be solved by the implementation not of a general strategy across all generations of employees but of generation-specific human resource strategies (D’Amato and Herzfeldt, 2008). Each strategy should be directed to generational differences and make a unique opportunity to leverage the strengths from each generation and create organizational competitive advantage.

The clear differences in worldview, workstyles, values and behaviors of generations have made challenge for human resource managers. „Managing the expectations of different generational groups in the workplace has forced Human resource departments to design separate sets of motivational drivers to optimize the performance of each group” (McGuire et al, 2007, p.595). Training needs of each generation differ, employers and human resource managers should match training to specific needs, as opposed to providing ‘blanket’ training to all employees (Tolbize, 2008). „One-size-fits-all reward strategies do not take individual preferences into account, but it can be argued that large employers do not have the capacity to customize reward packages at an individual level. The complexity of this type of customization would lead to significant expense in terms of time and coordination” (Bussin and Rooy, 2013, p.1). It is very useful for organizations to find a way to group the workforce according to reward preference. At the same time, it can provide a balance between individual

customization and organizational efficiency Organizations have to develop more flexible, dynamic and generation-specific reward strategies to support staff attraction and retention.

It is very important that organizations minimize cognitive gap between the expectations and perceptions of employees from different generations. Employers „could start by identifying and seriously attempting to understand the different expectations that members of each group have by observing, asking or reading related literature about generations' needs” (Angeline, 2011, p.250). Questionnaire concluded of statements from the model of generational diversity management (Figure 1) can help for organizations to understand expectations and requirements of each generation for human resource management. Through internal research, human resource professionals can play a strategic role within their organizations by identifying the percentage of each generation in organization's workforce and by gathering information about their work and non-work related priorities. This information will assist organizations in developing strategies for recruitment, engagement and retention (Fraone et al, 2008). Human resource professionals „are pressured to develop innovative recruitment initiatives, foster retention efforts, and widen communication techniques to reduce the problems of the different generations” (Jensen, Truong and Wiene, 2015, p.10).

„As with any diversity effort, the key to building bridges between people with different worldviews is sharing perspectives, communicating openly, spending quality time together, real listening, honesty, mutual respect, and valuing one another. Building relationships takes time, skill and strong leadership and it cannot be forced” (Warner and Sandberg, 2010 p.8). Human resource and talent management professionals should create common ground between generations, organizations are encouraged to develop policies and programs that will help meet each generation's unique needs and expectations (Bursch and Kelly, 2014).

Lack of attention to generational differences can make organization less attractive to employees. „Organizations that work proactively to address the different generations will reap the benefits, while those that ignore the impact of the multigenerational workforce risk losing in the war for talent” (Bursch and Kelly 2014, p.16). Concluding and managing a multigenerational team will become more important since team structure will become a main success factor in the future. „Life expectancy is getting longer due to various reasons such as better diets, increased availability of health care and medicines and general healthier way of life, which means employees are remaining in the work place for longer” (Bennett et al, 2012 p.279). Today organizations have to try to devise a strategy for workforce of four generations management. But in the future, it already could be workforce of five generations.

Regardless of the identity of each generation can cause conflicts, reduce productivity, impair communication and teamwork, therefore it is necessary to formulate strategies that focus on the management of generations and, mainly, managers should understand the generational differences. The model of generational diversity management is formed by studies of other authors and for this moment is hypothetical. It would be examined in the future by empirical research. According the content of model, it would be created questionnaire with four main components: recruitment and selection, development and training, motivation and leadership style. Each component would be formed by statements from the model and results of questionnaire would represent differences or familiarities of generations in various functions of human resource management. Based on the results of the empirical research, the model of generational diversity management would be adjusted by approved hypothesis and after that it could be applied in practice. It would help for organizations to better understand requirements of generational workforce. Because use of generational differences allows to improve performance and to provide sustainable competitive advantage to organizations. So rather than by a one general human resource management strategy across all generations organizations should apply mixed strategies, directed to each generation individually.

Conclusion

Employees of each generation are special, unique and valuable for organizations. Because of different their life experiences representative of each generation have different opinions, expectations, values, worldviews, working styles, behavior, etc. Organizations should ensure that employees from different generations interact with each other positively and it will be avoided any conflicts and disharmony between generations. Employers have to develop effective communication tools to minimize conflict, to create progressive human resource strategies to attract and retain talents and to shape management practices to enhance productivity. After empirical research, approved hypotheses from the model of generational diversity management could help for organizations to better understand generational differences in human resource management. Effective management of generational diversity allows to improve performance and to provide sustainable competitive advantage to organizations. The sooner employers realize importance of generational diversity management and develop and implement efficient human resource strategies at workplaces, the easier it would be to welcome generation Z employees to the new workforce.

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*INFLUENCE OF CULTURAL FACTORS ON ADDITIONAL COSTS OF IS
OFFSHORING PROJECTS*

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Abstract

Purpose of the article National culture as a key differentiation variable in offshoring compared to domestic outsourcing is still underestimated. A comprehensive and theoretically grounded examination of how national culture is likely to affect offshoring performance is necessary. The present article aims to provide a further step in cultural research exploring the magnitude of cultural influence factors on the additional costs of near- and offshoring projects in comparison with other cost drivers.

Methodology/methods Prior research on software development outsourcing is almost exclusively based upon the cultural model created by Geert Hofstede. Hofstede's model, though, is criticised within the cultural research community. A more recent study addressing this criticism is the Globe Study, which has been used in this study. Eight interviews with project managers were conducted, half of whom were responsible for software development nearshoring projects in Russia, and offshoring projects in India.

Scientific aims The research deals with the following main questions: (1) To what extent are cultural influence factors responsible for additional costs in near- and offshoring projects? (2) Is it possible to draw conclusions from the results regarding the advantages and disadvantages of near- and offshoring?

Findings According to the present study as software development projects offshored to India as expected were influenced more by cultural factors than those nearshored to Russia. In contrast, projects nearshored to Russia were obviously most influenced by non-cultural factors, namely Knowledge Deficits and Geographical Distance. Cultural aspects were only ranked third. Despite these apparent differences, a deeper analysis showed that both project categories were most influenced by the availability of skilled personnel.

Conclusion The study confirms the general expectation that the higher cultural distance of the offshoring location India as compared to Russia results in significantly higher ratings regarding the effects of culture in the projects offshored to India that were researched. This result should not be interpreted by practitioners prematurely as a recommendation for nearshoring as a silver bullet to avoid negative cultural effects.

Keywords: Culture, IS offshoring, IS nearshoring, Hofstede, Globe Study

JEL Classification: M15, M21

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Introduction

IS (information system) offshoring is not a new phenomenon at all – in the software development business it has become a critical component to reduce costs, increase access to talent or to reduce to time-to-market (Lewin et al. 2009, Doh, 2005). The general discussion of the advantageousness of offshoring in terms of cost savings has taken a back seat, as the new offshoring goals are called “strategic” and “transformational” (Clampit et al., 2015). Software development outsourcing is growing continuously, resulting in an increasing business volume that is still exposed to external factors such as cultural influence. A recent article in this field states that the key differentiating variable of offshoring compared to domestic outsourcing, national culture, was overlooked, and that a comprehensive examination of how culture is likely to affect offshoring is being asked for (Clampit et al., 2015). Bunyaratavej et al. (2011) states that external factors like culture are currently underexplored in offshoring research. Prior research such as Dibbern et al. (2008) improved the general understanding of extra client costs in software projects offshored to India by disaggregating them and adding a differentiated analysis of offshore-specific influencing factors. One of the implications for future research in Dibbern et al.’s study was “to examine whether cultural differences are smaller in nearshore arrangements e.g. between Germany and Russia”. Nearshoring is a special form of offshoring – from a central European perspective this means a dislocation to Eastern European countries. Against this background, the present article aims to provide a further step in cultural research by exploring the effect of cultural influence factors on the additional transaction costs of software development near- and offshoring projects in comparison with other major cost drivers.

In the following section, the theoretical foundation will be explained and subsequently, the applied methodologies will be described. Section three is dedicated to the discussion of the study’s results. Finally, section four provides the implications and conclusions from the research results.

1 Theoretical foundation

1.1 Cultural research by Hofstede versus Globe Study

Culture-focused research has become a widespread, dynamic study area, and understanding culture is viewed as increasingly important (De Mooij & Hofstede, 2010). Prior research on software development outsourcing is almost exclusively based on the cultural model of Geert Hofstede (Hofstede & Hofstede, 2011; 2006), which is still perceived to be the reference model in cultural research. However, Hofstede has been criticized within the cultural research community (Shi and Wang, 2010). A more recent study addressing this criticism is the Globe Study (House et al, 2004). One important difference in the Globe Study, in comparison to Hofstede’s cultural model, is the differentiation between values and practices: values are applied in the context of leadership styles as leadership style and reflect a target state. Practices in turn reflect actual behaviour, and are therefore relevant for analysing the influence of culture on IS offshoring projects. In addition to that, the Globe Study has more up-to-date values, differentiates between East and West Germany, and has surveyed managers, not employees. As the Globe Study offers decisive advantages as a basis for research, it was used in the present study.

Out of the nine cultural dimensions that were proposed and analysed by the Global Study, the following four are subject to the present research: Power Distance, Institutional Collectivism, Uncertainty Avoidance and Assertiveness. Not included in the research were the following dimensions: Societal In-Group Collectivism, as this dimension measures familiar relationships, while the Institutional Collectivism is more suitable for the professional world; Gender Egalitarianism, as this cultural dimension was derived together with Assertiveness from Hofstede’s Masculinity dimension and Assertiveness is more relevant to the researched area of software offshoring than Gender Egalitarianism; and finally Performance and Future Orientation, as to date, these two dimensions have hardly been used in cultural research in a context with IS offshoring. In order to not exceed the limited research scope of this study and to provide a certain comparability to prior research, these dimensions were not considered.

For building a research framework and generating propositions, deciding how pronounced the differences of the respective cultural dimensions are exactly according to Hofstede or Globe is not decisive at this point – it is instead important to make the following comparative statements regarding the cultural traits to be expected:

- a) Power Distance: lower in Germany compared to Russia or India
- b) Institutional Collectivism: lower in Germany compared to Russia or India
- c) Uncertainty Avoidance: higher in Germany compared to Russia or India
- d) Assertiveness: higher in Germany than in Russia or India

As Julia Trampel (2004) mentions in her research, it is possible that Hofstede’s results do not show the expected cultural gap between geographically vast and politically different countries such as, for example,

Germany and India. The same probably applies to the Globe Study. Hence, Hofstede's results and the Globe Study serve as a rough indication of the possible cultural gap within the framework of this study.

1.2 Research on additional costs

According to Carmel and Tija (2005), additional costs are defined as all costs in terms of time, effort, and other resources spent by the onshore (in case of so-called "captive offshoring", which is the case in this study) or client organization that go beyond the actual offshoring location's or external vendor's net costs plus the respective profit margin.

The risk of additional costs in the context of offshore outsourcing, according to Dibbern et al. (2008), arises from cultural, geographic and linguistic distance. The most plausible challenge is language barriers – effective communication is hindered by linguistic problems. Additional efforts can result from misunderstandings and necessary translations. It is widely assumed that new communication technologies like video conferencing increasingly substitute physical presence and face-to-face contact (Clemons et al, 1993). The nature of software development and the impossibility of transferring tacit knowledge only in the form of explicit functional requirements and specifications though make face-to-face meetings inevitable. Hence, the higher level of skill the tasks require or the more customer-specific the knowledge involved, the more the exchange of tacit knowledge and consequently physical meetings is required, leading to additional travel costs. According to Dibbern et al. (2008), cultural distance increases the costs for all processes where information exchange is required. Shared norms and values unconsciously form a generally accepted base for the behaviour of a social group. Due to differences in one or more cultural dimensions, another group may expect a completely different pattern of behaviour, which finally becomes apparent in cultural clashes (Hofstede and Hofstede, 2006) or "critical incidents". The underlying culturally induced behavioural differences that were the cause of a critical incident have to be counteracted (Dibbern et al., 2008) by the onshore location or client through, for example, a different communication style, but also measures that generate additional costs, such as more detailed specifications or frequent and tight control of the work quality and progress.

According to Trampel (2004), by definition, transaction costs occur when products or services are transferred across a technically separable interface and are a direct result of a division of labour. As near- and offshoring are a particular case of division of labour across large distances, it is understandable that transaction, or "additional" costs can make up a substantial part of total costs. "The measurement of transaction costs, though, is problematic. On the one hand, no uniform terminology exists; on the other hand, production and transaction costs are recorded collectively, making it impossible to determine transaction costs separately. Therefore, only qualitative statements can be made about changes in transaction costs which vary with the organizational solutions of offshoring and nearshoring" (Trampel, 2004, p.6).

2 Methodology

2.1 Scope of analysis

Eight semi-structured interviews with German onsite project managers working for a larger IT service provider were conducted. Half of the project managers interviewed were responsible for software development projects near- or offshored to the IT service provider's subsidiaries in Russia or India. Hence, all projects researched were performed according to a captive offshoring model and were selected according to the following criteria: new individual software or application development, overall offshore effort higher than 30 per cent, comparable project size of 400 to 600 man-days, and a total project duration of not longer than one year to avoid emerging intercultural effects due to repeated cultural interaction. In preparation for the interviews, a category system was designed based on the hypotheses with a three-step evaluation dimension scale for critical incidents ranging from no impact, to low impact, to significant impact as far as the project effort is concerned. In order to also consider statements from the interview partners that do not fall into the hypotheses categories, an extra category was provided. A corresponding code consisting of anchoring examples was assigned to each of the above categories also reflecting the three-step evaluation scale. The first part of the interviews was not theory based in order to provide a free space for the respondent's spontaneous and possibly objective descriptions of critical incidents. In a second step, proposition-based questions regarding critical incidents and their impact were asked.

2.2 Methods

The research method used in this study was the Problem Centered Interview (Mayring, 1990), as the subjective opinions of the interview partners were decisive for the research on intercultural misunderstandings, and interview partners proactively only mentioned very few problems. As culturally coined behaviours are

usually unreflected implicisms of both sides that only become visible in conflict situations, the Critical Incident Methodology was applied to stimulate the recall of situations in which cultural differences have led to communication problems, disappointment or frustration – and eventually resulted in additional project effort (Flanagan, 1954). For the analysis of the text material, Qualitative Content Analysis was used as an overall analysis framework as a common method for systematic text material analysis (Mayring, 1990).

2.3 Proposition-based research framework

The Globe Study's questionnaire items are quite generic and it had to be assumed that the interview partners would not find concrete situations or examples to provide an answer. A more tangible translation into paraphrased concrete business situations was required. To this end, assumptions regarding the original questions of the Globe Study were made and paraphrased propositions derived for the study. The following research propositions were derived from the cultural dimensions of the Globe Study:

- Power Distance 1: The number of *hierarchy* levels in the offshore location is higher and not compatible with the flat organization of the onsite location.
- Power Distance 2: The centralization of information and *decision-making* at the offshore location is higher and not compatible with the decentralized structures of the onsite location.
- Power Distance 3: The *control expectation* of the workforce in the offshore locations and the self-control attitude in Germany are not compatible.
- Collectivism 1: The *relationship-oriented* organization of the offshore locations is not compatible with the *task orientation* of the onsite project organization.
- Collectivism 2: The staffing of the offshore project team does not focus on optimal task execution, but is influenced by the relations that applicants have within the organization (*group behaviour*).
- Uncertainty Avoidance 1: The onsite location has a higher orientation to *structures and processes* than the offshore locations that prefer more *informal relationship-oriented* interaction.
- Uncertainty Avoidance 2: The *attrition rate* of the offshoring locations is significantly higher.
- Assertiveness: The German *assertive*, direct communication style is not compatible with the modest, indirect communication style of the offshoring locations.

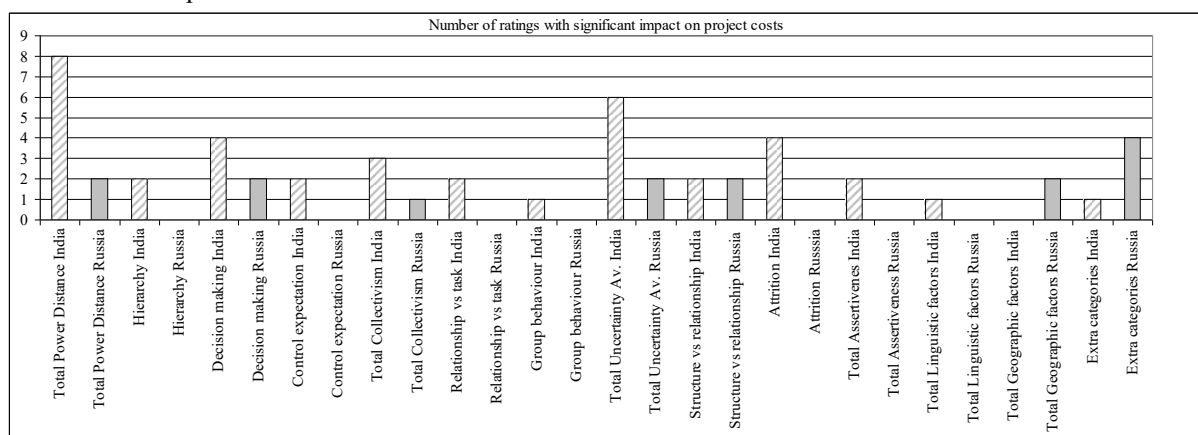
The propositions listed above are assumed to have a negative impact on project performance, and hence result in additional costs.

3 Results

3.1 Overview results

The table below illustrates the ratings with substantial impact on the project effort regarding cultural, linguistic and geographic distance, as well as the extra categories.

Table 1 Comparison of influence factors India vs. Russia



Overall, the study results show that projects offshored to India were most influenced by cultural factors than those nearshored to Russia, which were most influenced by non-cultural factors.

3.1.1 Summary results - India

Projects offshored to India were most influenced by the cultural categories Power Distance, Collectivism and Uncertainty Avoidance. All four interview partners rated the cultural influence factors “Attrition” (Uncertainty Avoidance) and “Hierarchical Behaviour” (Power Distance) as having the highest impact on additional project costs. The second rank is shared by the cultural influence factors “Decision Making Process” (Power Distance), “Relationship or Task Orientation” (Collectivism) and “Indirect and Subtle Communication” (Assertiveness). Non-cultural factors such as linguistic and geographic distance or extra categories played only a subordinated role.

3.1.2 Summary results - Russia

The four researched projects nearshored to Russia were most negatively impacted by non-cultural factors. All research projects were significantly influenced by problems due to “Knowledge Deficits” (Extra Category), leading to significant extra costs, according to the interview partners. Additional costs caused by “Travel Effort” (Geographic Distance) are in the second tier. Cultural influence factors can only be found in the third tier, shared by “Structures and Relationships” and “Attrition” (Uncertainty Avoidance) and Power Distance “Hierarchical Behaviour” (Power Distance).

3.2 Evaluation of cultural propositions

3.2.1 Overview of cultural proposition evaluation

The cultural proposition evaluation considers ratings with low and high impact on the project effort. Propositions are evaluated as very likely to be confirmed when rated as having a high impact by all four respondents. Two propositions are very likely, and three are likely to be confirmed in case of India. None of the propositions are very likely, or likely to be confirmed from the ratings of the Russian projects researched, and two are possible to be confirmed.

Table 2 Proposition evaluation for India and Russia

Proposition	Evaluation of impact Proposition		Evaluation of impact Proposition		
	India Verification	Russia	Verification	Proposition	
Power Distance					
1. The number of hierarchy levels in the offshore location is higher and not compatible with the flat organization of the host location.			↑		→
2. The centralization of information and decision making in the offshore location is higher and not compatible with the decentralized structures of the onsite location.			↗		↘
3. The control expectation of the workforce in the offshore locations and the self-control attitude in the host location are not compatible.			↗		↘
Collectivism					
1. The relationship orientation of the offshore location is not compatible with the task orientation of the host project organization.			→		↓
2. The staffing of the offshore project team is not focussing on tasks execution but on personal relationships.			↘		↘
Uncertainty Avoidance					
1. The higher orientation to structures and processes of the host location is not compatible with the preference for informal interaction of the offshoring location.			↘		→
2. The attrition rate in offshore locations is significantly higher due to cultural factors.			↑		↘
Assertiveness					
1. The assertive and direct communication style is not compatible with the modest and indirect communication style of the offshoring locations.			↗		↓
No rating One out of four Two out of four Three out of four All four respondents					
proposition verification very likely ↑ likely ↗ possible → rather unlikely ↘ unlikely ↓					

3.3 Discussion of proposition evaluation and findings

3.3.1 Power Distance - India

The confirmation of the three propositions relating to cultural effects from Power Distance in Indian offshoring projects can be considered as likely or very likely. Throughout the cases, the project managers reported critical incidents resulting from cultural differences between the German and Indian working culture. In the framework of the interviews, the “classical” cultural clash between the harmony-oriented Indian offsite and the mastery-oriented German onsite employees (Dibbern et al., 2008) was described. The Indian workers refused to say something that could be interpreted as negative, or to ask questions if they had difficulties in understanding instructions. Other critical incidents mentioned can be placed under the category violation of hierarchy-based norms (Nicholson & Sahay, 2001): direct and efficient communication was hindered by the hierarchical orientation of Indian workers. Sinha (1991) describes this phenomenon as power acceptance, and asserts that the preparedness to withstand conflicts with a superior hardly exists. The next problem cluster that was mentioned in the interviews can be described as a “check-with-boss” attitude (Sinha, 1991): “in the Indian teams, the boss decides what has to happen, and as long as the boss does not decide, nothing happens” (quotation from interview India). This attitude and the leeway in decision-making that does not exist results in longer decision-making processes, adding substantial extra costs. This corresponds with well-known findings from previous research (e.g. Dibbern et al., 2008).

3.3.2 Power Distance - Russia

The confirmation of the three Power Distance propositions for projects nearshored to Russia is ambiguous or rather unlikely. In the case of the proposition regarding hierarchy orientation, half of the respondents described incidents with high impact on the project effort. Similar to the observations in Indian projects, in Russia there also seems to be a certain conflict avoidance attitude regarding superiors: “during the knowledge transfer workshops, I noticed that the Russian colleagues did not ask questions as long as their superiors were attending” (quotation from interview Russia). Although the impact was rated as rather low, all four project managers described situations in which the decision-making process was hindered by hierarchy orientation: “sometimes there were slight delays for some changes because the team leader was absent and the Russian colleagues did not want to decide on their own” (quotation from interview Russia). Regarding the control expectation proposition, there was only one rating with a low effect on the project, which makes the validity of this proposition rather unlikely.

3.3.3 Institutional Collectivism - India

The validity of the two propositions regarding the collectivistic orientation of the Indian offshore location suggested by the Globe Study could only be partly confirmed. Two of the project managers interviewed rated the critical incidents observed regarding the proposition relationship versus task orientation as having a significant impact on the project costs: “You cannot expect an Indian developer to proactively contact you in case of problems, and often these will not be admitted even if you ask directly” (quotation from interview India). “It is not unusual that one day before a deadline or milestone, the Indian colleagues will tell you that it cannot be met, bringing forward an excuse that often has nothing to do with the real problem. This clearly hampers project progress adding additional costs, as we cannot go on as planned, and some expensive resources are sitting around waiting for input” (quotation from interview India). Sajeev and Ramingwong (2010) described overly protective behaviour among the team members that they called “mum effect”. In a collectivist society, the workplace itself can become a we-group (Hofstede and Hofstede, 2006), and the Indian team member’s behaviour protects the group against losing face. Also, Wildemann (2011, p.227) found in her research that “...a pronounced we-feeling indicates a mutual care for group members. The interview analysis confirms the cultural Indian collectivistic self-concept and shows the contrast to the western individualistic self-concept, which is based mainly on self-adducted performance. Indians always perceive performance in a team or family context”. The Indian behaviour is possibly understandable using Hofstede and Hofstede’s (2006) explanation: Collectivism means the preference of tight social relationships and communities in which the individual is integrated and which protect him in exchange for absolute loyalty.

Only one project member supported the proposition that project team staffing is more relationship than task-oriented, which does not suggest the correctness of this proposition.

3.3.4 Institutional Collectivism - Russia

The empirical evidence for the verification of the collectivism propositions’ correctness regarding projects nearshored to Russia is even weaker than for India. In the interviews, two project managers assessed the

relationship orientation of their Russian colleagues as having a slightly negative impact on the project effort: “The Russian colleagues are friendly and open-minded. However, sometimes I had the feeling that a good climate was more important than meeting deadlines” (quotation from Interview Russia). “My impression is that more companionable behaviour is expected, which hampers the competition among the team members who could clearly perform better individually” (quotation from Interview Russia). In Russia, a slightly higher relationship orientation was also observed in contrast to the protective “mum effect” in the Indian projects and the emphasis seems to be more on collegiality and a comfortable team climate.

There were no mentions of the relationship orientation of the staffing process, and hence this proposition can be evaluated as being probably false.

3.3.5 Uncertainty Avoidance - India

The correctness of the Uncertainty Avoidance proposition in Indian projects can absolutely be confirmed for attrition, however, not regarding the hypothesis for the assumed lower orientation to structures and processes – although this cultural factor was seen by two project managers as adding significant additional costs. The lower Uncertainty Avoidance scores did not turn out to be lower, but increased the need for structures and processes. This result, though, has to be interpreted carefully, as the responses in this area only referred to the increased effort for specification that was already described by prior research (e.g. Dibbern et al., 2008). Dibbern et al. (2008) described problems resulting from the well-known peculiarity of Indians not asking questions and therefore blindly implementing what was specified. The challenges reported in the framework of this study were safety margins on the cost estimates and excessively detailed planning before actually starting a project. This is contradictory to the expected outcome. Also, Buchan (2010) states, for example, that countries emphasizing communal ties gravitate toward looser relational- or reputational-based governance mechanisms, while individualist countries gravitate toward formal contracting and stricter accounting. A possible explanation may be that the generally high process orientation in software development and the higher CMMI implementation rate in India prevails over an otherwise generally lower orientation to rules and procedures in everyday life. As previously mentioned, the topic personnel turnover was the largest single contributor to additional project costs. All four project managers reported an exceptionally high attrition rate in their projects. The Indian developers were, for the most part, not shifted to other projects within the offshore location, but left the company. Messner (2007) described the particular set of problems of captive offshore centres regarding critical mass and attrition rate: If there is no continuous pressure from top management, control freak operational managers will refrain from moving work offshore. As a result, the captive unit does not reach its critical mass in terms of workload and the business case will fail. The highly skilled and trained workforce sits around, leading to attrition. From an Indian perspective, work coming to captive offshore centres is not very attractive anyway, as it mainly entails the maintenance of old systems and very rarely new technologies or new product development. Against the background of the high volatility of the Indian IT labour market and the strong motivation of Indian employees to constantly learn (Dibbern et al., 2008), this makes it difficult to keep Indian professionals under the circumstances described above. Obviously, the source for the high Indian attrition rate has an economic and a cultural component. Possibly, the culturally conditioned low uncertainty avoidance intensifies the readiness to change employers for economic advantages.

3.3.6 Uncertainty Avoidance - Russia

The study results with respect to the impact of Uncertainty Avoidance on the Russian projects partly confirm the proposition regarding a lower orientation to structures and processes, whereas the proposition regarding attrition cannot be supported. In the interviews, unstructured meetings, small discussions on possible alternative solutions, a tendency for improvisation and a not always consistent task-oriented work style were mentioned as causes for critical incidents and rated to have had a negative impact on the overall project effort. The problems described are representative of the typical clash between the relatively high task orientation on the German side and the higher people orientation of the Russian side. The latter can be illustrated by the seeming contradiction between the German motto “we do not necessarily have to love each other to do business” and the Russian slogan “if we don’t love each other we can’t do business” (Pfeffer, 2008, p.18).

3.3.7 Assertiveness - India and Russia

Finally, the proposition that the assertive communication style of the German onsite location is not compatible with the modest and indirect communication style of the offshore location could be partly confirmed for India and is likely to be generally rejectable for Russia. One project manager described a critical incident in which he was irritated by the constant smile of an Indian team member he had criticized previously, and another one experienced several incidents due to misunderstandings due to misleading verbal signals. These problems

were already extensively described in previous literature (e.g. Dibbern et al., 2008; Wildemann, 2011; Messner 2007).

4 Conclusion

4.1 Contribution

This paper contributes to literature on IS offshoring research by (1) giving an example of a practice-oriented research framework of propositions derived from the Globe Study for qualitative measurement of cultural factors in the framework of interviews, (2) providing a practical, however not representative, review of the effect of selected cultural factors on the additional efforts of near- and offshoring projects in comparison with linguistic and geographic distance using the examples Russia and India from a German perspective, and (3) attempts to draw conclusions for practitioners regarding near- and offshoring, also comparing the results with the accepted advantages and disadvantages.

4.2 Limitations

First and foremost, it should be recognized that the research is based on a very limited sample size and therefore is not representative. Due to the required comparability of the researched projects, it is difficult to reach a number of interviews that would enable statistically reliable research results. As project data are handled very restrictively even within IT companies, the identification of suitable projects and responsible project managers is challenging. Another major limitation of the research design is that only German project managers were interviewed, which poses the risk of a certain cultural bias. Third, the subjective rating of the impact of critical incidents by the project managers interviewed can lead to distortions of the results.

4.3 Implications

The study confirms the general expectation that the higher cultural distance of the offshoring location India as compared to Russia results in significantly higher ratings regarding the effects of culture in the projects offshored to India that were researched. This result should not be interpreted by practitioners prematurely as a recommendation for nearshoring as a silver bullet to avoid negative cultural effects. Apart from the lack of representativeness of the study's sample size, there are some possible explanations as to why cultural effects had less impact on projects nearshored to Russia, ranging from a cultural-based "input bias" of the interview partners (Ramachandran and Gopal, 2010) to dynamic intercultural processes via repeated interactions between home and host location (Li, Wei, & Liu, 2010). On the other hand, quite a while ago already, the literature announced new generations of professionals in offshore locations such as India that are starting to challenge the norms of their national culture by becoming more assertive (Crampton and Hindis, 2007). This announcement was not confirmed by this study.

Intercultural problems are frequently the result of partners presuming similarity concerning their cultures (Prelitz, 2000). Most managers of projects nearshored to Russia in the beginning of the interviews held that there is hardly any major cultural difference. In the course of the interview, however, they remembered some critical incidents they predominantly judged to have a rather moderate effect on the project effort. The associated question is a possible input bias of the responsible project manager. Ramachandran and Gopal (2010) found that low trust due to pre-existing judgments of worker incompetence continued to affect later performance assessments, even in view of contradictory objective information. Conversely, positive biases could lead clients to interpret vendor performance as more careful or respectful than outcomes actually warrant (Clampit et al., 2015). According to the study's results, factors other than cultural, linguistic or geographic distance had the highest effect on the projects nearshored to Russia that were researched: required project-specific knowledge transfer, also resulting in increased travel effort and hence also higher impact of geographic distance. This finding can be either interpreted as a wrong task fit by the home location or as insufficient availability of business knowledge at the host location. Besides the assumed cultural similarity, the generally accepted advantage of nearshoring models consists above all in the expectation that higher skilled tasks can be provided. The interview statements, however, agreed that the available Russian developers' excellent competence in computer science could not compensate for their lack of required business know-how. Dibbern et al. (2008) describe this offshore location-related characteristic as "absorptive capacity" (Lane et al., 2006), and the higher it is, the more prior experience personnel could gain with related projects (e.g. similar technology or business processes). A low level of absorptive capacity leads to the above-mentioned effort for knowledge transfer. Consistent with the study results, according to Dibbern et al. (2008), the absorptive capacity of the host location had the broadest impact on extra costs. This finding is not necessarily representative of projects nearshored to

Russia, as the location of the projects researched is a relatively small city where the availability of highly-skilled personnel is limited as compared to the Russian metropolis.

The latter, though, seems to be an effective protection against the Achilles heel of near- and offshoring projects: attrition. A substantial part of the negative effect of cultural distance that impacted the Indian projects researched resulted from attrition. The readiness for frequent changes in the work environment still seems to be quite pronounced among the Indian collaborators, which is partly explainable by the lower values for Uncertainty Avoidance. On the other hand, as Russia has the lowest score for Uncertainty Avoidance of all of the countries in view of the low attrition rate within the projects researched, this cannot be the only cause. Another deciding influence factor seems to be the simple availability of skilled personnel and the corresponding struggle for the best resources, which is clearly still more vigorous in India by far.

4.4 Further research

A number of implications for future research emerge from the previous discussion of the study limitations. First, a replication study with a larger sample size would allow statistically reliable data and possibly deeper insights into how cultural factors influence additional project costs. Second, research including the perspective of both the customer and the offshore site would be necessary. Third, more detailed evaluation dimensions would enable the minimisation of the impact of subjective perceptions in the interview partners.

Future research could examine which management capabilities and methods are effective to counter the challenges resulting from cultural distance in near- and offshoring projects. For instance, as control is one of the most commonly applied management methods, it would be important to understand how cultural factors influence the choice of control modes. Another important research area would be personnel turnover and the cultural mechanisms behind this phenomenon. Finally, as this study mainly analysed the negative impacts of cultural distance, future research could evaluate potential beneficial aspects of cultural differences on offshoring projects.

4.5. Summary

Although the study at first glance confirmed the general expectation that nearshoring projects are less negatively impacted by cultural factors than offshoring projects, it became apparent that additional costs in both project categories were most influenced by the availability of skilled personnel. Only then did cultural distance come into play. The study's key message is possibly the following simple statement: "get good people, train and keep them". As Levina & Vaast (2008) already concluded quite a while ago, it is not done with the ability to attract and retain qualified people in a given location, but also you have to manage them effectively in order to possibly avoid negative impacts from cultural distance.

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*ROLE OF EMPLOYEE POTENTIAL FOR DEVELOPING ORGANIZATIONAL
DYNAMIC CAPABILITIES*

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Abstract

Purpose of the article is to define employee potential and its specific dimensions. In addition to that the relevance of employee potential should also be established through literature review. The overview of dynamic capabilities was also made and the relationship between dynamic capabilities and employee potential is also to be portrayed. By doing so the methods how employee potential can also develop organisational dynamic capabilities can be carried out.

Methodology/methods This is aimed to be a theoretical article and in relation to that the scientific literature analysis to substantiate employee potential and dynamic capabilities were carried out.

Scientific aim To further theoretically develop and demonstrate the dynamic capabilities concept by establishing its relationship with employee potential present in organisations.

Findings Employee potential can be defined as the characteristics of an employee, which is valuable for the company, consequently can be given to the company by the employee and (or) utilized by the company but currently not being used by the company. In fact the company can be indirectly or accidentally using these potentials, but due to this the company cannot purposefully channel the employee potential to become a tool to achieve the competitive advantage. The constant requirement to strategically change in accordance with the environment while using the resources which in this case is the employee portrays the need for the company to constantly obtain something new from the employee. While the condition remains that for obtaining something new from the employee, the company must not be using that aspect in prior. As a result the findings are substantiated theoretically.

Conclusions The clear definition of employee potential is established by portraying its relevance through literature analysis. The description of Dynamic Capabilities was presented as the ability of the firm to purposefully create, extend, or modify its resource base in congruence with the changing business environment. Finally theoretically it was discussed employee potential can develop dynamic capabilities. The next possible step for this research is to carry out the empirical study on the demonstrated contents. After this the discussion should be carried out based on the results.

Keywords: employee potential, dynamic capabilities, creativity, talent, working potential, human resource management, strategic management

JEL Classification: M50

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Introduction

Today the technologically innovative organisations or companies struggle to maintain a competitive advantage in the turbulent environment. Companies in the changing environments need to anticipate these changes and react to them (Garrido et al, 2005). To do so, the companies use multiple tools and methods. The ability to systematically maintain this competitive advantage in a turbulent environment has been referred to as dynamic capabilities (DC) (Teece et al, 1997) making DC quite a good tool to combat this turbulent and changing environment.

An employee is a vital resource of the organisation and coincidentally work for organisational success (Hoenack, 1983; Garavan, 1995). Moreover if the organisational success is defined by its competitive advantage, it can be assumed that the employees work to create this competitive advantage and utilize their capabilities to create organisational DC (Eriksson, 2014). However it has not been clearly demonstrated the various factors or dimensions of an employee which drive to specifically develop the DC. While sorting these dimensions of employees, this can be referred as employee potential (EP).

Although the closest area of study representing the relationship between organisational DC and EP is 'strategic human resource development and strategic partner model' (Francis & Keegan, 2006; Garavan, 1991; Garavan et. al 1995; Garavan, 2007; McCracken & Wallace, 2000; Schuler et al. 2003; Sheppeck & Militello, 2000; Ulrich, 1997; Brockbank & Ulrich, 2005). It mainly identifies a multi-layered and complex relationship between the various actors; senior management, line managers and employees that aligns the goals of the organisation resulting in a cohesive organisational strategy in the fight to stay competitive.

This paper mainly concentrates on the theoretical substantiation of EP and its role to develop the organisational DC. The main problem tried to be solved is the lack of knowledge on the specific employee potential dimensions that are required to develop the organisation's dynamic capabilities.

1 Overview of Employee potential

In accordance with current times, managers as well as strategy scholars are deeply trying to realize how to use one of the most useful and competitive resources which is the Human resources (HR), that can be managed for the organisations' competitive advantage. Competitive advantage is a strategic management tool strongly reflecting on the resource based view which can be both tangible and intangible, use the firm's capability to perform across firms within an industry to achieve or reach its desired end (Amit & Schoemaker, 1993; Peteraf, 1993; Barney, 1991). The need for competitive advantage is heightened because it does not persist ceaselessly and so it must be renewed. Barney (1991) suggested that in the future competitive advantage will become an even stronger source of a firm's strength, hence the growing need for a strong management system for the various resources and as human resources remains to be one of the most important resources of the firm the need for a good human resource management system is inevitable. In accordance to this paper HR is considered to be the employees with respect to a company or firm which will be, can be or are being used as a valuable resource by the firm to sustain the competitive advantage. Accordingly an employee is a person who works in the service of another person under an express or implied contract of hire, under which the employer has the right to control the details of work performance (Black, 1934). This quite well explains that the employee under the hire contract is supposed to work as demanded by the employer which in this case is the company. Finally consolidating the statement, employees constitute the HR of a particular company and can play a direct role in attaining the company's competitive advantage.

However in order to achieve this competitive advantage, the high level in management of the HR should be attained. In order to achieve HR management's fullest extent in relation to the particular organisation, it should be able to integrate and utilize the employee potential to the fullest extend (Hansen & Güttel, 2009).

1.1 Defining Employee Potential

The development of Employee Potential (EP) is a necessary for strategic competence building and overall impacts positively for the company or organisation (Dileep, Sashidhar & Srota, 2013). In the mean while in a Harvard Business Review article from October 2011, Fernandez-Araoz, Groysberg and Nitin, (2011) "How to Hang On to Your High Potentials?" define high EP as a person's ability to succeed in roles with responsibilities of greater scale and scope. The authors describe "greater scale" as "a job in the same area but with, say, a larger budget or staff." "Greater scope" is "a job involving activities of substantially more breadth and complexity" (Winiarska-Januszewicz & Winiarsky, 2013). The basic characters that are identified of a high EP is to deliver strong results credibly and not at other's expense, mastering expertise beyond the technical and behaving in ways consistent with the company's values (Ready, Conger, Hill, & Stecker, 2010). In addition to that drive to excel, a

catalytic learning capability enterprising spirit and dynamic sensors also form a means to achieve high EP (Ready et al, 2010).

It is also defined that high EP is found among employees who are assessed to have the ability, organisational commitment and motivation to rise and succeed more senior positions in the company or organisation (Campbell & Smith, 2013).

While the establishment of high EP is seen quite necessary and can be essentially used for the competitive advantage of the company, to further understand or so as to achieve a high EP, EP has to be clearly defined.

On the whole EP can be defined as the characteristics of an employee, which is valuable for the company, consequently can be given to the company by the employee and (or) utilized by the company but currently not being used by the company. In fact the company can be indirectly or accidentally using these potentials, but due to this the company cannot purposefully channel the EP to become a tool to achieve the competitive advantage.

1.2 Theoretical substantiation of Employee potential

In order to clearly portray the importance EP it needs to be portrayed the different areas of work that has been carried out with regard to the status quo. Different theories of management and economics discuss the role and importance of EP. The theories that reflect upon the studies carried out in relation to employee will be portrayed in table 1. Furthermore the substantiation for employee potential can be carried out.

Table 1 Summary of literature that reflects on employee

Theory	Employee related focus area	Reference
Frederic Taylor's Theory of scientific management	It remains to be one of the very first theories that portray the reference to employee. As the scientific theory of management states "The principle object of management should be to secure the maximum prosperity for the employer, coupled with the maximum prosperity for the employee." Here focus was given to optimizing and simplifying jobs to increase productivity. The idea that workers and managers needed to cooperate with one another was also instilled here.	Taylor, 1919
Need and Motivation theory	According to needs theories of motivation, motivation is portrayed to be the willingness to dedicate very high levels of effort toward organizational goals, in the condition that extra effort satisfies some individual needs. A need in this context is an internal state that makes certain outcomes appear attractive. An unsatisfied need creates tension that stimulates drives within the individual. These drives then generate a search behaviour to find particular goals that, if attained, will satisfy the need and lead to the reduction of the tension. The main theories in relation with this are Maslow's hierarchy of needs theory, Alderfer's ERG model, McClelland's achievement motivation theory, Herzberg's motivator-hygiene theory/two factor theory and Vroom expectancy theory theory.	McClelland, 1961; Maslow, 1954; Mittelman, 1991; Alderfer, 1967.
Stacy Adam's Equity theory	Helps explain why pay and conditions alone do not determine motivation. It also explains why giving one person a promotion or pay-rise can have a demotivating effect on others. When people feel fairly or advantageously treated they are more likely to be motivated; when they feel unfairly treated they are highly prone to feelings of disaffection and demotivation.	Gill, & Stone, 2010; Huseman, Hatfield & Miles, 1987.
Human capital theory	Human capital is a collection of resources: all the knowledge, talents, skills, abilities, experience, intelligence, training, judgment, and wisdom possessed individually and collectively by individuals in a population. These resources are the total capacity of the people that represents a form of wealth which can be directed to accomplish the goals of the nation or state or a portion thereof.	Keeley, 2007; Samuel & Herbert, 1975
Employee engagement from a Self-Determination Theory	Extrinsic motivation can reflect a desire to gain rewards or avoid punishment (external regulation), boost one's ego or avoid feelings of guilt (introjection), attain a valued personal goal (identification), or express one's sense of self (integration). Identification and integration involve a high level of volition and, along with intrinsic motivation, are considered forms of autonomous regulation. Employee engagement is a property of the relationship between an organization and its employees. An "engaged employee" is one who is fully absorbed by and enthusiastic about their work and so takes positive action to further the organization's reputation and interests.	Kahn 1990; Crim & Gerard 2006; Shuck et al, 2011; Meyer, & Gagné, 2008; Deci & Ryan, 1985.
X and Y theory	These theories describe two contrasting models of workforce motivation applied by managers in human resource management, organizational	McGregor, 1960; Patience, 1973; Sahin, 2012; Townsend

	behaviour, organizational communication and organizational development. McGregor terms the two models as 'Theory X', which stresses the importance of strict supervision and external rewards and penalties; and 'Theory Y', which highlights the motivating role of job satisfaction and allows scope for workers to approach tasks creatively.	Bennis, 2007.
Human relations theory	Human relations suggests that management should treat workers as individuals, with individual needs. In doing so, employees are supposed to gain an identity, stability within their job and job satisfaction, which in turn make them more willing to co-operate and contribute their efforts towards accomplishing organisational goals. The human relations movement supported the primacy of organizations to be attributed to natural human groupings, communication and leadership.	Mayo, 1924; Rose, 1999; Bruce & Nylan, 2011; Wren & Greenwood, 1998; DuBrin, 2007.
Strategic Human resource management theory	Policy makers at government level have drawn upon the idea in order to promote 'high performance workplaces' and 'human capital management'. Attempts to describe, understand, critique and change organizations and theories of organizational structures and functioning. It incorporates employees into the system. It generally tries to link capabilities, motivation, employee relations and work.	Francis & Keegan, 2006; Garavan, 1991; 1995; 2007; McCracken & Wallace, 2000; Schuler et al., 2003; Sheppeck & Militello, 2000; Ulrich, 1997; Brockbank & Ulrich, 2005
Hackman and Oldham job characteristics model	Describes the relationship between job characteristics and individual responses to work. The theory specifies the task condition in which individuals are predicted to prosper in their work.	Hackman & Oldham, 1976,1980; Lunenburg & Fred, 2011
Employee performance theory	Individual performance is highly important for an organization as a whole and for the individuals working in it. Performance comprises both a behavioural and an outcome aspect. It is a multi-dimensional and dynamic concept.	Campbell, 1990; Campbell et al, 1993; Kanfer, 1990; Rose, 1999; Sonnentag & Frese, 2005
Employee behaviour theory	The theory of planned behaviour, a widely accepted expectancy-value model of attitude-behaviour relationship, suggests an individuals' behaviour is determined by attitudes toward behaviour, subjective norm, and perceived behaviour control.	Armitage & Conner, 2001; Ajzen, 1991.

It can be clearly noted that none of the above theories substantiate the definition portrayed for EP. As a result the term EP can be derived as a novelty. EP will define the set of characters portrayed by an employee that are currently not used by the company they are employed in to obtain competitive advantage by improving the company's DC.

Within the prior summary of theories with reference to table 1 it can be discovered that many of the possible characteristics of an employee is tackled. However neither of the above defines the employee potential. In addition to that many characteristics which will be shortly identified in the next subsection, has a possibility to be covered by the summarised theories but none of these were portrayed as an employee potential which in accordance is the possible characteristics of an employee that can be used by the company but not currently being used specifically.

1.3 Identification of Employee potential

In order to identify the EP in relation to the formulated definition, with reference to figure 1 EP can be perceived by various parameters. These parameters can be the employees' talent and (or) creativity (Cummings & Oldham, 1997), employees' personality and (or) character (Shore et al, 1995) and working potential which includes aspiration and (or) determination, ability and (or) skills and commitment and (or) engagement (Winiarska-Januszewicz & Winiarsky, 2014).

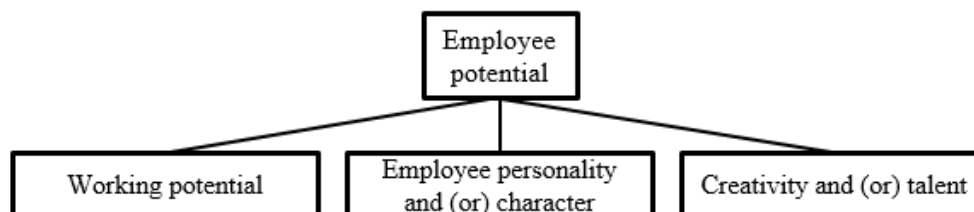


Figure 1 Identification of EP

Creativity and (or) Talent

Both creativity and talent comprise one of the positive potential produced by an employee. Talent is defined as the natural ability of an employee to excel at a duty or action (businessdictionary.com). It also reflects on the high aptitude of an employee to carry out the particular task requested by the employer. While amidst employee talent proves to be the employee potential and can be utilized by the particular employer. The major difference that exists between the proficiency of the employee and employee talent is that proficiency portrays to be the minimum required capability demanded by the employer while talent is an individual potential (Smilansky, 2006) capability which can be utilized by the company and further developed to obtain a higher possible capability which can add to the advantage. In the organisational viewpoint of employee talent, the talent can be found in all the different levels of the organisation, a close link between the individual employee potential and the organisational life of the employee should be created, the individual employee talent should be harvested and tried to be treated as an organisational capability to begin with (which later on can be developed to become an organisational dynamic capability) and finally the development of talent should be processed while making an exclusive talent pool valuable and difficult to imitate (Hatsum, 2010).

Although scholars draw many distinction between the terms creativity and innovation, it is quite evident that innovation is the result of creativity which is being implemented and being made a reality (Cummings & Oldham, 1997). The higher the creativity, the more the chance it can be implemented becoming a successful innovation in turn maintaining the competitive advantage for the company. Accordingly creativity is not merely the advent of innovation but in many ways also efficiently being able to solve problems and complex situations (Woodman, 1993). In a manner creativity is nonstandard or divergent thinking (Runco, 2007) which is much required in terms of an employee's potential moreover the transformation of it in to the performance.

Employee personality and (or) character

This area reflects mainly on the psychological capital (Luthans et al, 2007) in relation with the employee and the company. Employee personality and character form an employee potential and is highly influential for the development of the employee performance (Judge & Remus, 2002). Perception of the five employee personality traits can be extroversion, agreeableness, conscientiousness, emotional stability, and openness to experience (Ekinici & Dawes, 2009).

The extent of personality or character can consequently portray the levels of motivation combined with the specific ability of the employee to carry out the particular tasks (Kanfer, 2015). For example if the employee has high levels of emotional stability and openness to experience, he can be used to solve tough problems and his creativity and capability remains fully functional in diverse and difficult situation.

Working potential

In accordance with the corporate leadership council's HIPO program 2012 which intends to develop high potentials they represent the relationship between the working potential parameters as seen in figure 2. Here the clear classification and use of the employees' working potential to generate an overall high employee potential is demonstrated theoretically.



Source: Corporate Executive Board, 2012

Figure 2 Description of working potential

1. Aspiration and (or) determination: aspiration which describes the employees' potential to either desire responsibilities and accordingly rewards come with more senior (Winiarska-Januszewicz & Winiarsky 2014). While determination is a potential that drives the employees to take up these responsibilities while trying to attain advancements, financial rewards, work-life balance and overall enjoyment of working.

2. Ability and (or) skills: both ability and skills represent the combination of innate characteristics and learning skills that enable the employees to function properly on a daily basis. Innate characteristics can mean both mental or cognitive agility and emotional intelligence (Winiarska-Januszewicz & Winiarsky 2014). In the mean while learning skills comprise of both technical or functional skills and interpersonal skills.

3. Engagement and (or) commitment: The employees that are willing to involve voluntarily within the various activities organised consequently extending their ability to the company is engagement. In the mean while the increment of the engagement or engagement capital can lead to commitment which ensures the precise motivation that indulges to increment the individual potential.

2 To Develop Dynamic Capabilities using Employee potential (theoretical discussion)

Companies in the changing environments need to anticipate changes and react to them (Garrido et al, 2005). The ability to systematically and strategically change has been referred to as dynamic capabilities (Teece et al, 1997).

DC was primarily introduced by Gary Hamel in 1989 who demonstrated the multinational strategic research leading to Core Competences of the Corporation (Prahalad & Hamel 1990), although shortly after, in 1995, it was described by Ikujiro Nonaka and Hirotaka Takeuchi in their book on innovation strategy "The Knowledge-Creating Company" (Nonaka & Takeuchi, 1995). Finally, dynamic capability was referred to as "the capacity of an organization to purposefully create, extend, or modify its resource base" by Helfat (2007). Although in it is explained that the capacity to renew competences so as to achieve congruence with the changing business environment is Dynamic Capability too. This involves strategic management in appropriately adapting, integrating, and reconfiguring internal and external organizational drawbacks, resources, and functional competences to match the requirements of the changing environment. In line with Helfat (2007) we use the term „resource“ in its broad sense as in (Barney, 1991), and hence it includes activities, capabilities, etc., which allow the firm to generate the rent.

An employee is a vital resource of the organisation and coincidentally work for organisational success (Coleman, 2008; Hoenack, 1983; Garavan, 1995). And as the employee is used by the company, the accumulative capabilities of the employee decides the organisational capabilities. Moreover in the event organisational DC has to be portrayed, the employee should be used to do so.

There is some conceptual discussion related to these constituent processes: they are assumed to include both organisational and managerial processes aimed at identifying needs or opportunities for change, and at accomplishing that change to maintain a competitive advantage (Helfat, 2007).

So, essentially looking at resource based view (RBV) in the company's perspective, Daneels (2002) concludes that to understand how a firm evolves over time the dynamic RBV is kind of essential. In this case the firm over time tries to continuously renew and reconfigure itself to survive in the market while deploying its available resources.

Dynamic Capabilities are built rather than being bought in the market (Makadok, 2001). They mainly consist of organizational process or routines (Helfat, 2007; Zollo & Winter, 2002) which were imbibed by the firm over time and consequently used to reconfigure the firm's resource base by removing decaying resources or by recombining old resources with new ones using new methods or ways (Ireland, Hitt & Sirmon, 2003).

This thereby shows that Dynamic Capabilities are viewed in accordance with the path taken (Dierickx & Cool, 1989). This path is shaped by the decisions the firm has made in the past and the stock of assets it holds currently (Zollo & Winter, 2002). Path dependency "not only defines what choices are open to the firm today, but also puts bounds around what its internal repertoire is likely to be in the future" (Helfat & Peteraf, 2003). Path dependency could be grounded in knowledge, resources familiar to the firm, or influenced by the social and collective nature of learning (Teece et al, 1997). Learning plays an important role in creation and development of Dynamic Capabilities. Zolo and Winter (2002) demonstrate that learning is the base of dynamic capabilities and guides their evolution. Learning is also considered as a dynamic capability itself, rather than an antecedent of it. As such, learning as a dynamic capability has been identified as "a process by which repetition and experimentation enable tasks to be performed better and quicker" (Teece et al, 1997). In Zollo and Winter (2002) authors attempted to meld these two positions by explaining that "dynamic capabilities are shaped by the co-evolution of learning mechanisms".

Helfat and Peteraf (2003) emphasise that to qualify as a dynamic capability, the capability not only needs to change the resource base, but it also needs to be embedded in the firm, and ultimately be repeatable. Dynamic capabilities are argued to comprise four main processes: reconfiguration, leveraging, learning and integration (Teece et al, 1997). Reconfiguration refers to the transformation and recombination of assets and resources, e.g., the consolidation of manufacturing resources that often occurs as a result of an acquisition (Ambrosini et al,

2011). Leveraging refers to the replication of a process or system that is operating in one area of a firm into another area, or extending a resource by deploying it into a new domain (Ambrosini et al, 2011), for instance, applying an existing brand to a new set of products. As a dynamic capability, learning allows tasks to be performed more effectively and efficiently, often as an outcome of experimentation, and permits reflection on failure and success. Finally, integration refers to the ability of the firm to integrate and coordinate its assets and resources, resulting in the emergence of a new resource base.

The constant requirement to strategically change in accordance with the environment while using the resources which in this case is the employee portrays the need for the company to constantly obtain something new from the employee. While the condition remains that for obtaining something new from the employee, the company must not be using that aspect in prior.

The identified aspects of EP which consist of talent and (or) creativity (Cummings & Oldham, 1997), employees' personality and (or) character (Shore et al, 1995) and working potential which includes aspiration and (or) determination, ability and (or) skills and commitment and (or) engagement (Winiarska-Januszewicz & Winiarsky 2014), can clearly form the criteria which can efficiently develop DC.

Conclusion

Before commencing conclusions a few areas for future research will be highlighted. As noted by multiple authors, the challenge of conceptual research is to develop empirical measures. The next possible step for this research is to carry out the empirical study on the demonstrated contents. The proposal to observe the role of EP for the development of DC should be carried out empirically. After this the discussion should be carried out based on the results.

In conclusion the definition of EP was established as well as its relevance was highlighted by the literature description of prior theory. EP can be defined as the characteristics of an employee, which is valuable for the company, consequently can be given to the company by the employee and (or) utilized by the company but currently not being used by the company. The identification of the primary dimensions of EP were also carried out and theoretically established. The most important dimensions of EP are the employees' talent and (or) creativity (Cummings, & Oldham, 1997), employees' personality and (or) character (Shore et al, 1995) and working potential which includes aspiration and (or) determination, ability and (or) skills and commitment and (or) engagement (Winiarska-Januszewicz & Winiarsky 2014).

The description of Dynamic Capabilities was presented as the ability of the firm to purposefully create, extend, or modify its resource base in congruence with the changing business environment.

The exact measurable dimensions of EP influencing is a novelty, as a result it is hard to establish substantial proof theoretically. Further research should be carried out in order to establish EP.

Finally theoretically it was discussed EP can develop DC. The constant requirement to strategically change in accordance with the environment while using the resources which in this case is the employee portrays the need for the company to constantly obtain something new from the employee. While the condition remains that for obtaining something new from the employee, the company must not be using that aspect in prior.

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*MINDFULNESS, JOB SATISFACTION AND JOB PERFORMANCE: MUTUAL
RELATIONSHIPS AND MODERATION EFFECT*

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Abstract

Purpose of the article This article examines the relationship between mindfulness, job satisfaction and job performance.

Methodology/methods We used a self-report job performance questionnaire, a job satisfaction scale from the Job Diagnostic Survey and the Czech version of the Five Facet Mindfulness Questionnaire. We excluded 8 items from the Five Facet Mindfulness Questionnaire Observing subscale following suggestions of other authors who measured mindfulness in a population without meditation experience. The sample consists of 241 Czech employees. We did not focused on employees with an experience with mindfulness training and/or meditation.

Scientific aim We examined the mutual relationships between all three variables while specifically focusing on mindfulness as a possible moderator in the relationship between job satisfaction and job performance. We also controlled the influence of neuroticism (NEO-FFI), job dynamicity and respondents' sex.

Findings Job dynamicity, neuroticism and sex were weak predictors of job performance. Mindfulness had weak positive effect on job performance, too. However, mindfulness did not help to explain the variance in job performance beyond neuroticism, job dynamicity and sex. Mindfulness also had no relationship to job satisfaction. We did not find a significant relationship between job satisfaction and job performance and results did not support the hypothesis that mindfulness was a moderator of the relationship between job satisfaction and job performance.

Conclusions We extrapolate our findings to reflect on a potential utility of mindfulness training. For further research we would suggest exploring the relationship between mindfulness and job performance in an experiment using mindfulness training for individuals with a high level of neuroticism.

Keywords: mindfulness, job performance, job satisfaction, dynamicity, neuroticism

JEL Classification: M12, M59

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Introduction

The concept of mindfulness has increasingly received more attention throughout the past decades particularly in clinical psychology (Hülshager, Alberts, Feinholdt, & Lang, 2013). A substantial body of research that has been accumulated suggests that mindfulness has salutary effects on a range of outcomes such as well-being, life satisfaction, vitality and levels of anxiety and chronic pain (Brown, Ryan, & Creswell, 2007; Eberth & Sedlmeier, 2012; Keng, Smoski, & Robins, 2011). That gradually led organizational scholars to start exploring the concept of mindfulness at the workplace resulting in a recently growing body of studies in that setting (Hülshager et al., 2013; Reb, Narayanan, & Ho, 2015; Vich, 2015).

Mindfulness is originally a concept stemming from Buddhist philosophy and religious practices. However, the concept has been secularized during its adoption into mainstream psychology thinking and interventions (Dhiman, 2009; Fortney, Luchterhand, Zakletskaia, Zgierska, & Rakel, 2013). Although a clear conceptual definition of mindfulness has been somewhat elusive, it can be defined as a receptive attention to and awareness of present events and experience (Good et al, 2015). Baer, Smith, Hopkins, Krietemeyer, & Toney (2006) describe mindfulness as a hierarchical construct with five facets pertaining to observing, describing, acting with awareness, non-judging and non-reacting.

Mindfulness has a trait-like character and is usually measured by self-reports. Simultaneously, mindfulness can be also viewed to have a state-like characteristic. However, both trait and state aspects of mindfulness were shown to have similar relations to other concepts (Glomb, Duffy, Bono, & Yang, 2011; Weinstein, Brown, & Ryan, 2009).

Mindfulness can be trained and developed by mental training commonly referred as meditation (Fortney et al., 2013). Such training have been shown to have long-term effects on levels of mindfulness of participants (Dhiman, 2009; Visted, Vøllestad, Nielsen, & Nielsen, 2015). The increasing proliferation of mindfulness training is among the main reasons driving the importance of research on the topic (Baer, 2003).

Organisational scholars have started to pay more attention to mindfulness in management research in the past 5 years. This study contributes to emerging body of research focusing on the relationship between mindfulness, job satisfaction and job performance.

1.1 Mindfulness and Job Satisfaction

According to several recent studies, mindfulness of employees is weakly positively connected to their job satisfaction (Andrews, Kacmar, & Kacmar, 2014; Hülshager et al., 2013; Charoensukmongkol, 2014; Reb et al., 2015). Furthermore, a qualitative study by Foureur and colleagues (Foureur, Besley, Burton, Yu, & Crisp, 2013) showed that it is possible to positively influence the level of job satisfaction and perceived stress by mindfulness training. Such interventions are also helpful for individuals with severe symptoms. A study of previously diagnosed workers found that after mindfulness training, majority of them were no longer in the clinical range on the scales of depression, stress and anxieties that were occupationally related (Gold et al., 2010).

The perception of stress is important for explaining the relationship between mindfulness and job satisfaction. Mindful individuals perceive situations as less stressful, generally report fewer stressors and act in a less-stressed way than less mindful individuals (Foureur et al., 2013; Gold et al., 2010; Weinstein et al., 2009). Weinstein and colleagues found that (2009) once put into challenging situation, more mindful people tend to stay more objective and use adaptive coping strategies over the avoidance coping strategies. Therefore, they generally experience more positive than negative emotional reactions (Hülshager et al., 2013; Kiken & Shook, 2011). Furthermore, mindful people use more effective stress regulation behaviour not only in specific threatening situations but also in common everyday activities (Weinstein et al., 2009).

The relationship between mindfulness and job satisfaction can be also explained by interpersonal relationships. More mindful individuals tend to be more accepting and empathic which can lead to better workplace relationships (Epstein et al., 2015; Glomb et al., 2011). They tend to pay more attention to the environment and put decreased emphasis on possible negative evaluations that others can have of them. Furthermore, they avoid comparing themselves to others in negative demoralizing way (Carson & Langer, 2006) and at the same time they are more effective in using social support (Glomb et al., 2011). This can contribute to higher quality relationships with co-workers (Charoensukmongkol, 2014).

Emotional awareness can also help to explain the relationship between mindfulness and job satisfaction. Emotional awareness correlates strongly with job satisfaction (Weng et al., 2011). It was argued that higher levels of mindfulness are connected with less negative emotions and better mood at work leading to higher satisfaction levels and higher job enjoyment (Glomb et al., 2011; Hunter & McCormick 2008).

To sum up, we can posit that the contemporary research supports the existence of a positive relationship between mindfulness and job satisfaction. However, there is only a few studies directly investigating this relationship. More studies are needed to further research various aspects of this relationship and to provide more robust evidence for its existence.

H1: Mindfulness has a positive relationship with job satisfaction.

1.2 Mindfulness and Job Performance

Several recent studies brought evidence regarding a small positive relationship between mindfulness of employees and their job performance (Dane & Brummel, 2013; Reb et al., 2015). More mindful individuals seem to be more productive at work. This relationship can be also explained through various mechanisms.

The first mechanism for the positive relation is better control and stability of attention. Individuals with higher levels of mindfulness focus more easily on their work and complete tasks more effectively than those with lower levels of mindfulness (Good et al., 2015, Mrazek et al., 2014). Mindful people are more capable of keeping wide breadth of attention and simultaneously paying attention to details which leads to quick detection of possible issues and early problem management (Good et al., 2015). Mindful individuals thus make less mistakes and cause less unsafe situations (Andrews et al., 2014; Schmertz, Anderson, & Robins, 2009; Zhang & Wu, 2014). Better attentional control and stability also helps to handle distracting thoughts that are a sign of absent minded behaviour which leads to decreased work performance. This kind of behaviour is characterised by mind-wandering during a task (Brown & Ryan, 2003; Reb et al., 2015; Mrazek et al., 2014).

Another mechanism explaining the relationship between job performance and mindfulness is improved decision making. Mindfulness facilitates a thoughtful decision process that is characterized by suppressing impulsivity and deeply considering the situation before giving a response. It is also facilitates awareness of multiple perspectives and speed of their processing which leads to better problem solving skills (Glomb et al., 2011; Langer, 1989). Moreover, mindfulness facilitates implementation of plans and intentions into real practise which leads to more achieved work goals (Chatzisarantis & Hagger, 2007; Reb et al., 2015).

Recently emerged research supports the existence of a positive relationship between mindfulness and job performance. However, there is only a handful of studies directly investigating this relationship which warrants further study of various aspects of the relationship if robust conclusions are to be drawn.

H2: Mindfulness has a positive relationship with job performance.

Attention to details and its wide breadth, better problem solving and avoiding mistakes might indicate that mindfulness is more connected to job performance in dynamic work environments that are more fast-paced, stressful and complex-task oriented. In such dynamic environments mindfulness is positively connected to performance (Dane & Brummel, 2013). Based on these results, the dynamicity of a job will be controlled in this research.

1.3. Mindfulness and Relationship between Job Satisfaction and Job Performance

Even after decades of research, the relationship between job satisfaction and job performance is unclear. There are several theories providing different explanations of this relationship. Seven basic models were identified but neither one of them is considered to represent a consensual understanding (Judge, Thoresen, Bono, & Patton, 2001).

Several meta-analytic studies focused on the relationship between job performance and job satisfaction. In their meta-analyses, Petty, Mcgee and Cavender (1984) found an average correlation of $r = .31$, and Judge and colleagues (2001) found an average correlation of $r = .30$. However, the results of individual studies were ranging from $r = .04$ to $r = .86$ (Judge et al., 2001; Petty, Mcgee, & Cavender, 1984) which warrants consideration of moderators that can influence the relationship between job satisfaction and job performance. Moderators that were addressed in previous studies include rewards, salary, job complexity or self-esteem. Studies focusing on these moderators had mixed results with only some of them yielding significant results (Judge et al., 2001). We assume that mindfulness can act as another moderator in the relationship between job satisfaction and job performance. As described earlier, there is emerging evidence that mindfulness is positively related to job satisfaction and job performance. However, these relationships seem to be small and they do not preclude a possible moderating effect of mindfulness. We suggest that mindful people are more focused on their work tasks and are less distracted by their emotions and beliefs about the job and thus their performance is less affected by attitudes such as job satisfaction.

H3: Mindfulness moderates the relationship between job satisfaction and job performance. The relationship between job satisfaction and job performance is weaker in people with a high level of mindfulness.

According to previous research there is a strong negative correlation between mindfulness and neuroticism (Brown & Ryan, 2003; Giluk, 2009). In a study by Brown and Ryan (2003), notable reductions in correlations of mindfulness to other variables occurred when neuroticism was controlled. Therefore, it can be assumed that some part of mindfulness variance can be explained through neuroticism (Giluk, 2009). To aid interpretation of the results of our study, we decided to control the effect of neuroticism.

2 Method

A total sample of 241 people participated in the study. We recruited respondents via Facebook and e-mail invitations and asked them to fill in an online questionnaire. Being a working adult was the only condition for participation. The age of respondents ranged from 18 to 65 ($M = 34$; $SD = 10.9$). 46 respondents had a part-time job and 195 had a full-time job. Women ($N = 157$) prevailed. Not all the participants filled in the entire questionnaire which led to various sample sizes in different analyses.

2.1 Measures

We measured job satisfaction using the General Satisfaction scale from the Czech version of the Job Diagnostic Survey (short form; Hackman & Oldham, 1974). The scale consists of 3 items with a 7-point response scale (strongly disagree – strongly agree) with higher scores indicating higher satisfaction.

For job performance measurement, we developed a new self-report inventory. An expert panel of three authors of this study created the inventory to include various aspects of job performance. We piloted the inventory on a sample of young adults. The inventory consists of 9 items with a 5-point response scale (strongly agree – strongly disagree) with higher scores indicating higher performance. The sample item is “I am able to meet objectives in my job”. The complete inventory is available on request from the authors. We present the analyses proving internal consistency and factor validity of the inventory in the results section of this study.

We measured mindfulness using the Czech version of the Five Facet Mindfulness Questionnaire (Baer et al., 2006; Žitník, 2010). It consists of 39 items with a 5-point response scale (strongly disagree-strongly agree). The scale is divided into 5 subscales: observing, describing, acting with awareness, non-judging of experience and non-reactivity to inner experience (Baer et al., 2006). We computed mindfulness as an average of answers to 31 items in the questionnaire. We excluded 8 items from the observing subscale following suggestions of other authors who measured mindfulness in a population without meditation experience (e.g. Malinowski & Lim, 2015).

We used the Czech version of the Neo Five-Factor Inventory to measure neuroticism (Hřebíčková & Urbánek, 2001). The neuroticism subscale consists of 12 items with a 5-point response scale (strongly agree – strongly disagree). At the end of the questionnaire we asked respondents about demographic characteristics (sex, age, full-time/part-time job) and dynamicity of their job (1 question, 10-point scale, 1 = I do routine tasks that repeat all the time and there is no need of innovative solutions, 10 = every day there is something new, I have to react on new and unexpected situations that need innovative solutions).

3 Results

We conducted an exploratory factor analysis on all items of the job performance inventory. The Kaiser-Meyer-Olkin measure verified the sampling adequacy for the analysis, $KMO = 0.84$. Bartlett's test of sphericity ($\chi^2(36) = 701.19$, $p < .001$) indicated that correlations between items were sufficiently large. In the analysis, just one main factor was found that was loaded by all 9 items.

Table 1 presents descriptive statistics of all study variables. Surprisingly, there was no relationship between job satisfaction and job performance. Neuroticism and job dynamicity correlated weakly with job performance, job satisfaction and mindfulness and we included them in all analyses to control their influence. We also added respondents' sex into analyses to control its influence.

Table 1 Descriptive statistics and correlations among variables

	<i>N</i>	<i>M</i>	<i>SD</i>	1	2	3	4	5	6
1. Job performance	236	3.84	0.62	(.83)					
2. Job satisfaction	241	5.19	1.34	.10	(.82)				
3. Mindfulness	219	3.42	0.48	.23**	.05	(.88)			
4. Mindfulness-5F	219	3.36	0.42	.22**	.07	.93**	(.86)		
5. Neuroticism	241	2.56	0.63	-.28**	-.21**	-.56**	-.50**	(.76)	
6. Job dynamicity	239	7.23	2.16	.18**	.25**	.17*	.18**	-.06	
7. Male / Female	241			.06	-.02	-.06	.02	.27**	-.03

Notes: ** $p < .01$; * $p < .05$; the Cronbach's α are on diagonal in parentheses; Mindfulness-5 = Mindfulness with 5 facets including "Observe"; Male / Female 1 = male, 2 = female.

As shown in table 1, mindfulness did not correlate with job satisfaction. We performed regression analysis to control the effect of neuroticism, job dynamicity and sex. None of these variables suppressed the effect of mindfulness on job satisfaction and adding mindfulness into the regression model did not help to explain the variance in job satisfaction (see table 2). Thus we did not find support for Hypothesis 1 that mindfulness had a positive relationship with job satisfaction.

On the other hand, mindfulness correlated positively with job performance (see table 1). This supports Hypothesis 2. However, mindfulness did not help to explain the variance in job performance beyond the variance explained by neuroticism, job dynamicity and sex. Adding mindfulness into the model with neuroticism, job dynamicity and sex did not improve the model and mindfulness itself was not a significant predictor of job performance (see table 2).

Table 2 Regression of job satisfaction on mindfulness and job performance on mindfulness

		DV = job satisfaction				DV = job performance			
		<i>B</i>	<i>S.E.</i>	β	ΔR^2	<i>B</i>	<i>S.E.</i>	β	ΔR^2
1. step	(Constant)	4.89	.52			3.83	.22		.14**
	Job dynamicity	.16**	.04	.25	.09**	0.05**	.02	.20	
	Neuroticism	-.40**	.15	-.18		-0.30**	.06	-.32	
	Male/Female	.11	.20	.04		0.23**	.08	.18	
2. step	(Constant)	6.46	1.08			3.60	.46		.00
	Job dynamicity	.17**	.04	.27		0.05**	.02	.19	
	Neuroticism	-.57**	.18	-.27	.01	-0.27**	.08	-.29	
	Male/Female	.16	.20	.05		0.22**	.09	.18	
	Mindfulness	-.38	.23	-.13		0.06	.10	.05	

Note. ** $p < .01$.

We tested Hypothesis 3 using a moderation analysis. We included all the controlled variables into the first step of regression analysis. We added job satisfaction and mindfulness into the second step and their interaction into the third step. The interaction of mindfulness and job satisfaction did not improve the model and was not significant as a predictor of job performance (see Table 3). Therefore, we did not find a support for Hypothesis 3 that mindfulness moderates relation between job satisfaction and job performance.

Table 3 Mindfulness as moderator in relationship between job satisfaction and job performance

		<i>B</i>	<i>S.E.</i>	β	ΔR^2
	(Constant)	3.83	.22		
1. step	Job dynamicity	0.05**	.02	.20	.14**
	Neuroticism	-0.30**	.06	-.32	
	Male/Female	0.23**	.08	.18	
	(Constant)	3.64	.50		
2. step	Job dynamicity	0.05**	.02	.19	.00
	Neuroticism	-0.03**	.08	-.29	
	Male/Female	0.22**	.09	.18	
	Job satisfaction	-0.01	.03	-.01	
	Mindfulness	0.05	.10	.04	
	(Constant)	5.53	1.16		
3. step	Job dynamicity	0.06**	.02	.20	.01
	Neuroticism	-.28**	.08	-.30	
	Male/Female	.23**	.09	.19	
	Job satisfaction	-0.37	.21	-.86	
	Mindfulness	-.50	.33	-.41	
	Job satisfaction * Mindfulness	.11	.06	.98	

Note. ** $p < .01$.

4 Discussion

The aim of this research was to explain the relation between mindfulness, job satisfaction and job performance. Our results suggest that mindful people are not more satisfied with their job but they have higher job performance than less mindful people. However, the level of mindfulness does not predict job performance beyond neuroticism, job dynamicity and sex. Furthermore, mindfulness does not moderate the relationship between job satisfaction and job performance. This relationship is similar in people with various levels of mindfulness.

Our study complements recent studies that found a positive relationship between mindfulness and job performance (Dane & Brummel, 2013; Reb et al, 2015). Similarly to Giluk (2009), we found a strong negative relationship between mindfulness and neuroticism. It seems that in populations without meditation experience, people with a lower level of neuroticism have also a higher level of mindfulness and that is why they perform better. Therefore, it is important to study mindfulness in non-meditating population in the context of neuroticism and it is reasonable to consider mindfulness as a mediator of the relationship between neuroticism and job performance. High neuroticism might lead to a diminished ability pay present attention to the tasks at hand leading to lower job performance.

Contrary to the previous research (Andrews et al., 2014; Charoensukmongkol, 2014), we did not find support for the existence of a positive relationship between mindfulness and job satisfaction. This result has more possible explanations. There may be a certain level of unsatisfactory work conditions that even mindfulness cannot mitigate. On the other hand, less mindful people may be satisfied in really good job positions without the presence of any supporting mechanisms. The results of our study may also differ from recent studies due to sample characteristics. Descriptive statistics of our sample show that respondents scoring close to the upper end of the job satisfaction scale prevailed. It is possible that our sample included generally satisfied employees which would impede studying differences between people with high and low job satisfaction. However, the job satisfaction scale used in this study does not have standardized norms which prevents assessing the level of job satisfaction in the sample.

To explain the relationship between job satisfaction and job performance (for a review, see Judge et al., 2001) we proposed mindfulness as a moderator. However, we did not find a relationship between job satisfaction and job performance neither in the complete sample nor in respondents with a certain level of mindfulness. Unsatisfied employees with a high level of mindfulness are affected by a low level of job satisfaction similarly to employees with a low level of mindfulness. It is possible that employees with a high level of mindfulness are not motivated to use their mindfulness to focus on their work when unsatisfied with their job and therefore their low satisfaction affects their performance comparably to their less mindful colleagues.

The methods used for collecting data should be considered when interpreting our results. For mindfulness measurement, we used a multi-facet questionnaire that assesses various aspects of mindfulness. Previous studies used one-dimensional scales. For measuring job performance, we have chosen self-report questionnaire, whereas other studies mainly used managerial reports or objective performance criteria. Self-reports may be biased. However, the managerial reports may be equally biased and objective criteria may be influenced by various external factors. Although self-reports have possible limitations in terms of actual job performance, they reflect how employees feel about their performance. Moreover, the self-report measure allowed us to include employees with various jobs to our sample.

Conclusion

One of the goals of our study was to describe the role and impact of mindfulness at workplace. Such goal is warranted in the light of increasing proliferation and popularity of mindfulness training programs which overshadow a relative lack of evidence supporting them (Kelly, 2012; Hansen, 2012). The study provides indirect support for mindfulness training as a tool to increase employee performance. For further research we would recommend a study with a long-term experimental design which would assess changes in job performance of participants with a high level of neuroticism who attend mindfulness training. Such training should increase participants' trait mindfulness more than their trait neuroticism which should allow for investigating the effect of mindfulness on performance beyond the effect of neuroticism (compare Vibe et al., 2013). We also recommend to measure job performance using various objective and subjective criteria. It would be meaningful to simultaneously use self-reports of job performance and objective performance criteria and analyse how they are differently impacted by mindfulness.

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*TECHNOLOGY VERSUS HUMANS: EFFECT OF THE MINIMUM WAGE ON
THE LONG TERM UNEMPLOYED IN THE CZECH REPUBLIC*

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Abstract

Purpose of the article The article deals with the institute of the minimum wage. The goal is to assess current technological developments and their effect on low skilled labour with earnings that fall in the lowest decile of earnings in the Czech economy in the period 1998 – 2013.

Methodology/methods The cliometric method is used and it is based on time series analysis and on the statistical significance of the long term and short term relationships between various variables using the bivariate vector error correction procedure.

Scientific aim The process of technological change in the Czech Republic in the analyzed period was characterized by a massive inflow of foreign direct investment, new technologies and the introduction of market innovations. New technologies changed the structure of the economy and led to the structural unemployment and introduction of the institute of minimum wage. This paper tries to find connections between long term unemployment and the minimum wage.

Findings The detailed investigation into the rate of unemployment among groups at risk of being substituted by technology and the ratio of the minimum wage to decile wage, that the influence of the minimum wage fully manifested itself. Over the examined period, for every percentage point increase in the ratio of the minimum wage to the decile wage, the rate of unemployment amongst women and long-term unemployed men and women increased substantially.

Conclusions Employing new technologies can be cheaper and results suggest that they already are cheaper than labour costs for the minimum wage low qualified worker. The risk of being unemployed is going to be due to artificial intelligence even higher; however, more links have to be found between the unskilled labour and new technologies.

Keywords: technology, artificial intelligence, unemployment, minimum wage, long-term unemployed, women

JEL Classification: E24, J30, O33

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Introduction

This paper analyses the effects of minimum wage on the unemployment rate in the Czech Republic. The goal is to assess current technological developments and their effect on low skilled labour with earnings that fall in the lowest decile of earnings in the Czech economy. In the period 1998 - 2013 there were a lot of changes. The process of change started with internet technologies and the perception at the turn of the last century that the Czech Republic had become a developed economy. Public industrial policies were focused on manufacturing industries, especially the automotive industry. This industrial focus led to a massive inflow of foreign direct investment, new technologies and the introduction of market innovations.

The time series approach was chosen as the preferred method for collating empirical evidence. The purpose of this was to be able to test the statistical significance of the long term and short term relationships between various variables using the bivariate vector error correction procedure. The variables were based on data on the minimum wage and unemployment rates as provided by the Czech Statistical Office. The data are considered credible, however it should be noted that over the examined period the methodology for counting the exact number of unemployed, changed. It is for this reason that the unemployment rate for the economically active population (15 - 64 years old) is used, rather than the problematic officially reported unemployment rate.

This paper focuses on public policy which is focused on the labour market. Under the term labour market policies we understand all policies, institutions and legal standards focused on the economically active population. These are not only visible expenditures on employment policy tools (active employment policy; passive employment policy; and State benefits policy), primary institutions (employment offices, Ministry of Labour and Social Affairs) and fundamental legal standards (Employment Act No. 435/2004 Coll. and Labour Code), but also policy concerning innovation, investment subsidies, education, social cohesion, social protection (minimum wage) and the health status of economically active people. This concept of labour market policy and the extremely broad interpretation thereof, which includes the human factor as well as companies, institutions in the public sector and associated regional economic structures, is also used by the Czech Ministry of Labour and Social Affairs.

1 The minimum wage

In contrast to the standard expenditure tools, there also exists an alternative independent set of tools that affects the equilibria of the labour market. These alternative tools, which work on the basis of threat, have proven to be more effective than expenditure programmes. Under these tools, applicants wanting to apply for benefits have to undergo rigorous procedures or participate in publicly beneficial work (Rosholm and Svarer, 2008). The range of relevant policies also cover issues such as currency rules, the suitable regulation of the State's finances (without inflation fluctuations) and the creation of a sound banking sector so that SMEs (small and medium-sized enterprises) and independent entrepreneurs can invest in long term capital and start-up businesses (Fertig, Schmidt, & Schneider, 2006; Baumgartner & Caliendo, 2008; Caliendo & Kuenn, 2011).

The minimum wage is also one of these tools. To date, the minimum wage has had an almost ambiguous effect on the labour market. In other words, it has had no effect on employment or unemployment (Oesch, 2010). The real impact of the minimum wage in the Czech Republic is also not provable (Pavelka, Skala, & Cadil, 2014). Another analysis shows that in the past it was considered more advantageous not to have a job on the minimum wage because life on benefits provided more money and free time (Pavelka, 2012). In addition, the increasing value of free time due to the higher living standards of inhabitants of the Czech Republic is a negative contributory factor to the increased risk of the negative impact of the minimum wage on the labour market.

According to a liberal branch of economic theory, the minimum wage is a traditional tool which cannot function effectively. They suggest that the policy creates so-called "involuntarily" unemployed because those seeking work are not able to find work because of the limitations to employers set by the minimum wage. As a consequence of this, the individuals are forced to live on benefits. For them it is more advantageous to do so than to make the effort to increase the value of their personal human capital (through education and health status). It also does not motivate them to officially look for work; in many cases they participate in the black economy (Wawrosz, Heissler & Mach, 2012).

The result of this is the subsequent replacement of labour with capital i.e. in the positions at risk because of the minimum wage (shop assistant, cook, administrative employee, etc.) a machine is "employed". The introduction of new technology or artificial intelligence is more advantageous to the employer (sum of labour costs) than a low-qualified employee. Modern technologies are therefore more and more often pushing out those groups in the labour market that are at risk of exclusion.

Rapid advances in artificial intelligence, robotics and machinery are the new reality. This is not something new. History has shown that there is a positive correlation between new technologies and prosperity. The ad-

vances being made in artificial intelligence may seem like hype to the layman but for academics it is an intensive research topic.

2 New technologies and structural change

The twentieth century was characterized by the accelerated development and implementation of informatics and computer technology in all areas of human life. The evolutionary developments in that time have seen the construction of the first computer to fully automatized calculations and the management of production processes including thermonuclear reactions, up to the construction of the first supercomputers and the world of omnipresent electronics being designated as pervasive computing.

At present, at the start of the 21st century, we stand at the verge of the threat of so-called artificial intelligence. This area of informatics that is primarily focused on the development of new technologies and their automation arouses controversial opinions and concepts among the professional public. From the viewpoint of psychology and social sciences, artificial intelligence may be considered to be one form of non-human intelligence (Turing, 1950; Tvrdý, 2011). The effort to create artificial intelligence that is comparable with human intelligence persists to this day.

The advance of artificial intelligence will not only substantially influence the labour market, but also change the whole of human life. Traditional routine work will gradually disappear due to the growing levels of automation, whereby the labour force with average potential and qualifications will start to lose job opportunities in agriculture as well as in industrial branches (Buchtová, Šmajš, Boleloucký, 2013). An analysis by the World Economic Forum in Davos, suggests that the rise of artificial intelligence will prove to be a tipping point for the labour market. Rough estimates suggest that there will be a net loss of 5.1 million jobs across the world's fifteen leading world economies over the coming years. This number is arrived at on the basis that it is assumed that changes in technologies will result in a total loss of 7.1 million workplaces, but that this will be compensated to some degree by the creation of up to 2 million new jobs. It should be noted that the fifteen key economies referred to account for approximately 65% of the total labour force in the world. At the same time the previous assumptions are being made, the analysis also supposes that there will be a growing demand for certain types of qualified employees such as data analysts and professional business representatives. The rise of new technologies will have the highest negative impact on the employment of women because their workplaces are often concentrated in areas of low growth or receding segments such as sales, office and administrative positions.

The mathematician Vernon Vinge (1993) defined the concept of singularity connected with the end of the intellectual dominance of humans. Generally speaking, singularity is defined as a state in which technical progress will achieve such levels that it determines the turning point in the definition of a future state. It is a state in which technical intelligence will be able to adequately replace human intelligence. The basis of this vision leaves the questions open about whether it is realistic to speak about achieving singularity in this century, and whether or not the advent of computer superintelligence meets or exceeds the scope of human imagination and current possibilities. One of the leading advocates and adherers of this philosophy is Raymond Kurzweil (Kurzweil, 2005; Kurzweil and Grossman, 2004), who simultaneously adheres to the theory of the exponential growth of society and human perception. He believes that by 2025 people will successfully perform the first computer simulation of the human brain, so-called "retroactive brain engineering", that by 2030 a balanced state will have been achieved between human and artificial intelligence, and that by 2050 singularity will have been achieved. However, the opinions in a number of other scientific studies do not concur. They in fact raise ethical questions about singularity and describe the possible impact on civilisation.

The professional public as well as academics now face two issues. Firstly, to what degree the replacement of human intelligence by artificial intelligence, the creation of artificial technologies and information systems, and the simultaneous loss of the regulation and control systems of man, are justified. Secondly, to what extent the prognoses (from the present point of view) and supposed prognoses are real with regards to the replacement of human forces by artificial intelligence with the current and gradual loss of employee and professional capacities. What can be stated with certainty today is: by the gradual change of the position of human subjects in society both in and outside of their work, revolutionary changes are coming in the character of human work. This is especially due to the strengthening of autonomous, regulative and/or auto-regulative elements that will appear with the constantly growing intellectual base. It is also reasonable to expect that these principle changes will also have an effect on financial, administrative and social areas of life as well. These developments will doubtlessly bring a number of risks as a result of modern information technologies e.g. loss of identity of enterprises and employees, protection, the transfer and preservation of data, mental health of employees, use of growing free time, etc. Another serious issue that is coming to the fore is that of the unbalanced access to most modern technologies, or the opportunity to use them. If current trends are maintained, the issue could potentially further deepen the already strong social differences between the advanced and developing nations of the world.

3 Technology and the minimum wage

This paper builds on the thesis that the labor power at risk has been being replaced by the artificial intelligence and smart technology since the new millennium. There are other factors (mostly psychological) on the supply side of the labor power which are determining the persons at risk and they willingness to work or study. This paper explores the demand side i.e the strategy of the firms. Firms can be motivated by the minimum wage to employ a machine, i.e technology and reduce the number of unskilled workers. Firms cannot cut the wages of unskilled labour below the minimum wage. It is a simple cost reducing strategy and this paper explores this idea.

4 Methods and data

Data comes from Czech statistical office and Czech Ministry of Labour and Social Affairs and the summary statistics are presented Table 1. To evaluate the impact of minimum wage, the basic descriptive relationship between two economic values was followed. From this cliometric (historically-econometric) point of view it is possible to not only test hypotheses built on economic theory, but also normative political declarations about the influence of a certain employment policy tool on the labour market. The cliometric attitude outlined above is not burdened by any pre-condition of a neoclassic economy e.g. perfect competition. The only necessary pre-condition is for a long-term mutual relationship between two economic variables. The outputs of the estimates of this empirical relationship enable the description of short term Granger causality and the long-term balance between the two variables.

Table 1 Summary of statistics for indicators of minimum wage

Variable	Number of observations	Average	Standard deviation	Minimum	Maximum
Minimum wage	85	5 578.71	2 412.77	2 200.00	8 500.00
Decile wage	41	10 528.17	1 409.80	8 187.00	12 665.51
Long term unemployment rate of men	63	2.62	0.66	1.40	3.70
Long term unemployment rate of men women	63	4.08	1.02	2.20	5.60
Unemployment rate of women	84	0.08	0.02	0.04	0.11

Source: Czech Ministry of Labour and Social Affairs, based on investigation of wages. The data in the quarterly statements and financial indicators are in CZK.

For the description of the historical data with which to describe the relationship between the two economic variables, more advanced methods were required. This model of two variables is built on the so-called co-integration (mutually influenced and long-term balanced relationship) relationship of two time series (Johansen, 1995).

On the basis of graphical representations we can assume that the Equation 1 of the VEC model may contain various types of trends (constant and linear trends and their variants – limited only by the equation for the long-term relationship) which are not taken into consideration in the general formalized expression (Equation 1, more see Hamilton, 1994).

$$\begin{aligned} \Delta y_t &= \beta_{y0} + \beta_{yy_1} \Delta y_{t-1} + \beta_{yx_1} \Delta x_{t-1} + \lambda_y (y_{t-1} - \alpha_0 - \alpha_1 x_{t-1}) + v_t^y \\ \Delta x_t &= \beta_{x0} + \beta_{xy_1} \Delta y_{t-1} + \beta_{xx_1} \Delta x_{t-1} + \lambda_x (y_{t-1} - \alpha_0 - \alpha_1 x_{t-1}) + v_t^x \end{aligned} \quad (1)$$

All the expressions in Eq. 1 are considered to be stationary only if the α_0 and α_1 coefficients are consistently estimated. The consistency of estimate was tested by carrying out a Jarque-Bera test. Residua (disturbances) were tested for normality (Jarque & Bera, 1987). Another test, the Lagrange-multiplier test, consisted of testing the presence of residua autocorrelations with a selected degree of delay (Johansen, 1995). The VEC model was subsequently tested for full covariant stability of the co-integration vector $(1, -\alpha_0, -\alpha_1)$. As a result of the

relatively low number of observations, only values of 0.9 or lower were considered to be fully stable for the evaluation test.

The model, which underwent all three tests (normality of split, autocorrelation, and full covariant stability), was considered to be consistently estimated. In situations where there were inconsistencies, non-observance of the pre-condition of normality of residua (v^Y and v^X), or the presence of autocorrelation, the co-called seemingly unrelated regression with highest probability was observed. This implied that the mutual relationship between the two variables could not be subsequently interpreted. The relationship therefore either did not exist or it was, with the highest probability, more complex and required the involvement of more variables.

In a situation in which we did not precisely know the long-term co-integration vector, including the rapidity of return on the long-term balance “ λ ” (expression representing the error correction terms), the model was considered to be consistently estimated. However, it would be unclear how to precisely achieve a long-term balance. This fact was not an obstacle to the short-term analysis.

The resulting number lags in the model is not arbitrary, it is estimated based on the selected statistics which help to decide the optimum number of lags in the model based on several criteria (test statistics, information criteria). This testing took place by creating lagged variables in the model up to the level of eight time sections. On the basis of the established number of lags, the Johansen test for co-integration was carried out. This was done in order to determine if there was a generally observable long-term relationship between the series (statistically consistent or only a seeming one) which could be estimated by means of the VEC model. This test involved the testing of the degree of co-integration by means of Osterwald-Lenum critical values (1992).

If we expect a direct (positive) relationship e.g. between employment and expenditure on active employment policy, we expect that the λ_x coefficient from equation (1) will be positive. Due to the character of the VEC model, λ_y coefficient will be negative (Johansen, 1995). The lambda coefficient expresses the deflection from the long-term balance between the series. Their numerical expression may be interpreted as the rapidity of return to the long-term balance.

In other words, if a deflection of, for example, the development of the employment rate i (y_t) from the development of expenditure on active employment policy (x_t) occurs, the last values for the employment rate (y_{t-1}) and expenditures on APZ (x_{t-1}) help, on average, to predict the rapidity of return to the long-term balance in equation (1). We can therefore conclude that both time series move around the common balance on average, that they are co-integrated and that they are in a positive mutual relationship. It follows from this that the positive deflection of the employment rate from the mutual balance of both numerical rows will be corrected on average by the drop in the unemployment rate ($-\lambda_y * y_{t-1}$) and the growth in expenditures for APZ ($+\lambda_x * x_{t-1}$). This principle is defined through the construction of the co-integration vector $(1, -\alpha_0, -\alpha_1)$. By means of the selected method (VEC model) it is possible to accurately estimate the long-term relationships between the two variables. This method is justifiably preferred over other estimation methods such as auto-regress or cross-section models with lagged variables (Gonzalo, 1994).

5 Results

In the aggregate expression, (Table 2) the long-term influence of the minimum wage on the 10% of inhabitants in the least well paid jobs and unemployment rate of woman was followed. On average, the share of minimum wage in the decile wage in the Czech Republic achieved a level of approximately 63% between the years 2000 and 2010. It may be deduced from the equation for the long-term relationship that the influence of the minimum wage is serious in this case. Each percentage point increase in the ratio above 63% increases the female unemployment rate by 0.6 percentage points.

In the Czech Republic, we followed the direct long-term dependency between the ratio of the minimum wage to decile wage and the rate of long-term unemployment (Table 3). In both cases, the minimum wage has a negative impact on the long-term unemployment rate of the 10% of inhabitants in the lowest paid jobs. We know that the long-term relationship with female employment exists and is probably more serious than for male employment, however, due to the non-significant coefficient of rapidity of return in the long-term balance, we do not know the precise mechanism for achieving this long-term balance. The result should therefore be interpreted cautiously.

Table 2 The influence of the ratio of minimum wage to decile wage and unemployment rate of women in the Czech Republic

Unemployment rate of women (15-64 years),	Ratio of minimum wage in CR to decile wage in CR MINDEC = minimum wage/ decile wage
Consistent relationship	Yes, RT(1)
Impact of unemployment rate	No
Impact of minimum wage	No
R ² : unemployment rate	3.34%
R ² : variable of minimum wage	24.23%
Long-term relationship	$u = -0.292 - 0.001 \times t + 0.622 \times \text{MINDEC}$
Rapidity of return (u, MINDEC)	(-0.022; 0.328 [†])
Period and number of observations	2/2000–1/2010; N=40

Note: RT(1) – limited trend, one-year lag. R² – coefficient of determination, share of explained variability of stated dependent variable by means of independent variables.

[†] $p < 0.10$

Source: Data comes from Czech statistical office and Czech Ministry of Labour and Social Affairs

Table 3 Influence of the ratio of minimum wage to decile wage and long-term unemployment rate in the Czech Republic

Rate of long-term unemployment u12m = u (12 months+)	Ratio of minimum wage to decile wage in the Czech Republic MINDEC = min. wage / dec. wage	Ratio of minimum wage to decile wage in the Czech Republic MINDEC = min. wage / dec. wage
	Male	Female
Gender	Male	Female
Consistent relationship	Yes, N (4)	Yes, RC (3)
Impact of unemployment rate	No	No
Impact of min. wage variable	LRP(3) = 6.23	No
R ² : unemployment rate	47.64%	22.58%
R ² : variable min. wage	49.11%	50.09%
Long-term relationship	$u12m = 3.74 \times \text{MINDEC}$	$u12m = -23.14 + 40.66 \times \text{MINDEC}$
Rapidity of return (Y, X)	(-0.116 [†] ; 0.016 [†])	(-0.012; 0.004 [†])
Period and number of observations	1/2001-1/2010; N=37	1/2001-1/2010; N=37

Note: LRP(K) is the sum of all the lagged variable coefficients characterizing the short term impact (Granger causality) of the followed variable in the number of K=(T-1) coefficients, where T is the number of lags. Consistent relationship (Yes/No) is supplemented by information on the involved trend in the VEC model with inclusion of (T) years of delay – e.g. Trend (T). RC - the constant is only involved in the equation of the long-term relationship. N – The constant is omitted from the equations of the VEC model. R² – coefficient of determination, share of explained variability of the stated dependent variable by means of independent variables.

[†] $p < 0.10$.

Source: Data comes from Czech statistical office and Czech Ministry of Labour and Social Affairs

For men, this long-term relationship is statistically consistently estimated, including the rapidity of return to the long-term balance. Each additional percentage point in the ratio of minimum wage to decile wage increases the rate of long-term unemployment by 0.037 percentage points (0.4 percentage points for women). Over a short period, we followed the immediate reaction of employers in the form of Granger causality. When the ratio of the minimum wage to the decile wage changes by 10% percentage points within three quarters the growth in the long-term unemployment rate increase by 0.6 percentage points.

6 Discussion

For many people, the combination of free time and income without work is far more preferable than a physically demanding low-paid job. Low wages in combination with high benefits do not provide the necessary stimuli to search for a job. They lead to a "poverty trap", whereby the socially weak live a passive lifestyle at the

mercy of the State. This especially concerns long-term unemployed men and women, but also other risk groups, adolescents and low-qualified women. With regards to women, the situation is more complicated and our results are not clear cut. It can be assumed that the minimum wage only in part influences the unemployment rate of women and there are also other factors which play a role. This implies that only a certain section of the female population has low qualifications, which means that they apply and acquire the decile wage on the labour market.

We have shed some light on the issue of the technological substitution of low skilled workers. Our evidence is not direct and there are other factors at work, but we can observe a connection between low skilled low paid jobs and the level of minimum wage. The minimum wage motivates firms to consider employing a machine (cash desk, automat etc.) in low skilled positions and as results there is a link between the low skilled and the level of minimum wage.

Conclusion

The situation for the long-term unemployed is connected with the minimum wage because the minimum wage prevents them from finding an appropriate job. One of the explanations is in the effect (technological substitution) on the demand side. The employment of new technologies is cheaper than labour cost for the minimum wage worker. It follows on from the results of this research that the unemployment rate of those groups at risk (man and women) of exclusion from the labour market grows each time the minimum wage increases in proportion to the decile wage. This manifests itself in the form of less interest in the worst paid jobs. For the weakest in society it is a problem to find a job because the value of their work is lower than the minimum wage fixed by law.

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*IMPACT OF MANAGERIAL BEHAVIOURS ON POSITIVE INTERNAL
COMMUNICATION IN POLISH COMPANIES*

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Abstract

Purpose of the article There is bountiful research on the impact of managerial behaviours on internal communication in companies carried out in the USA and Western Europe. Yet, the research on the subject in Eastern and Central Europe, including Poland, is scarce, and even so, the relations between managerial behaviours and internal communication can be affected by national culture. Polish employee relations with large Hofstede's power distance are quite different from American or British which are usually our benchmarks in research.

Methodology/methods In this study, we used the theory and research from the Anglo-Saxon database to reconsider and build upon several aspects of managerial behaviour and its relations with positive internal communication in Polish companies. There were three stages in this study. First, we used a Delphi method to create a definition of positive internal communication and specify the issues to be studied in further stages. Next, we conducted a questionnaire survey in Polish companies, finally we carried out in-depth interviews in selected organisations. In analyses, we used descriptive statistics and a correlation matrix for all the variables. We tested our hypotheses using Pearson correlation and regression analyses.

Scientific aim The aim was to study the impact of top management behaviours on positive internal communication.

Findings This study contributes to the literature on business communication and enhances researcher's understanding of the role that managerial behaviour can play in creating positive internal communication in Polish companies. We developed our definition of positive internal communication and operationalised its elements on the basis of literature review and our own research.

Conclusions We demonstrated on our sample that in Polish environment it is top management behaviour that is more important for the creation of positive communication than the middle management behaviour. However, more comparative studies are needed.

Keywords: positive internal communication, managerial behaviour, national culture

JEL Classification: M120, D230

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Introduction

Reasons for study. Regarding the conference topic on the challenges of human resources in the world without frontiers we would like to touch upon the cultural intricacies that despite globalisation add up to the make or break of the successful business communication.

Whenever people get together, in a social group or a business venture, communication inevitably happens. The larger and the more structured the group is, the greater the need for communication to be managed for it to be effective. Think of it like that: two cello players, with a little practice, can play beautifully as a two-person team. But a 95-person symphony orchestra needs a director to be able to play at all and the quality of the director's communication will affect the whole playing process.

No doubt, efficient internal communication is vital for companies in any cultural environment (that is concluded in all reports on corporate communication e.g. Towers Watson communication reports in the US, 2013/14 or GFMP Management Consultant reports in Poland, 2014) and there are two good reasons why we set out to study the relations between managerial behaviours and positive internal communication in Poland.

First, there is bountiful research on the impact of managerial behaviours on internal communication in companies carried out in the USA and Western Europe (just to mention the research of International Association of Business Communication or International Communication Association). Yet, the research on the subject in Central and Eastern Europe, including Poland, is scarce, and even so, the relations between governance and internal communication can be affected by national culture.

The second reason for our research is that we focused our attention on the aspect of the positive internal communication as opposed to the research on the internal communication that is mainly interested in the communication barriers and methods how to overcome them.

The challenge today as never before is to motivate the hearts and minds of employees at all levels of the organization to strive for continuous quality improvement, cost reduction, meeting customers' expectations and countering the competition.

National culture aspect. Communication handbooks for managers created on the basis on the Anglo-Saxon research recommend improvement of managerial behaviours as means of improving internal communication (e.g. Bovee, Thill, 2013 Scholes, 1997). However, they do not take into consideration the notion of national culture. In management and business studies the term culture is used particularly to explain differences appearing in behaviours of organisation members which result in differences in their organisation business performance (Glińska-Neweś, 2012). Problems such as attitude to power and authority in an organisation, teamwork and inner-group relations, communication, attitudes to conflict, notion of changes, and many more are influenced by a set of values, norms and patterns of behaviour that characterise a certain group of people (in this case – members of a certain organisation).

One of the most popular models of cultural dimensions has been created by the Dutch researcher Geert Hofstede. His initial framework described the culture on a basis of four, now it has been expanded to six variables. The variable we would like to consider is power distance (small to large) that refers to the extent to which the less powerful members of organisations accept and expect that power is distributed unequally. In most of Polish companies and institutions the power distance (PDI) is large. According to a survey conducted in Poland in accordance with Hofstede's methodology PDI is 72 which is significantly more than in countries such as these from Anglo-Saxon cluster (PDI 33), German cluster (PDI 27) or Scandinavian cluster (PDI 28) (Nasierowski and Mikula, 1998).

Positivity and internal communication. In the USA Positive Organisational Scholarship has been the most famous umbrella notion covering the "research on the plus" and its Center for Positive Organizations is connected with University of Michigan Ross School of Business. In the search of factors that drive organisational development more and more researchers concentrate on the positive phenomena such as flourishing and teamwork (Fredrickson, Losada, 2005) or employee well-being (Burke, 2010). The positive lens are applied other 'positive' research notions: Positive Organizational Behaviour (Luthans, 2002) or Social Capital (Putnam, 1995). In Europe the research on the positive organisation is scattered among different institutions and countries. A concept of the Positive Organizational Potential (Stankiewicz, 2010; 2013) represents this research stream in Poland.

As managerial communication is particularly important to the organisation, some theories which refer to leadership are also connected with communication, for example Leader-Member Exchange theory (Graen, Uhl-Bien, 1995) or Path-Goal Theory (House, 1996). However, we have been searching for a theory that would not only consider the barriers of the communication system but also the added value of communication. Motivating Language Theory (MLT) has been particularly interesting to the verbal communication between a supervisor and

subordinate and assumes it is a bilateral process. MLT is founded on the British philosopher J.L. Austin's speech theory (1962) that divided the speech functions into three dimensions: locutionary act (defined by the meaning), illocutionary act (classifiable not only by its content but also by its force) and perlocutionary act (classifiable by its consequential effects upon the feelings, thoughts, or actions of the audience). In management studies MLT was first used by J. Sullivan (1988) and developed by J. and M. Mayfield (1995, 2009) and other researchers (Zorn, Jr., S.E. Ruccio, 1998, Madlock 2008, Wang, et al. 2009). Motivating Language Theory divides managerial communication into three dimensions: direction-giving language, empathetic language and meaning-making language. The theory assumes all three need to be balanced and create a synergy in order to influence the subordinates.

In the course of the literature studies on Motivational Language Theory (Sullivan, 1988; Mayfield, Mayfield, Kopf, 1995; Madlock, 2008), Positive Organisational Scholarship (Cameron and Spreitzer, 2012, Fredrickson, 2009), K. Ruck's functions of internal communication (Ruck, 2012) and our previous research (Wińska, 2013) we have defined positive internal communication as *such form and content of internal organisation, which has motivational and emphatic functions as well as it explains and supports important organisational values and integration.*

1 Hypotheses

Top management behaviours & positive communication. The improvement of the top management communication (especially the CEO's communication) will be most cost-effective way of improving the employee communication satisfaction (Gray 2004; Quirke, 2008, 135; Gerstner, 2003, 14; D'Aprix, 1996, 28-30, Ruck, 2012). Reinertsen et al. (2008, 46) prove that the issue that draws the leader's attention also draws the attention of the whole company. So if the leaders pay their attention to internal communication, the middle managers will follow their example. Young and Post (1993, 31-43) point out that top management support is indispensable in showing middle managers that effective communication is the most important managerial activity in an organisation. Argenti and Forman (2002, 128) state that communication skills should be included in the basic every manager's toolset, a habit that is shared with leaders and understood at every management level. Scholes (1997, 37) proves that employees trust their immediate supervisors, preferring them to any other organisational source due to the direct exchange of communication. Thus we propose:

H1: *Setting a good example by top management of creating positive relationships with employees is positively related to positive internal communication.*

Employee participation & positive communication functions. The next hypothesis derives from the studies on the national cultures (Hofstede, 2014) and its impact on governance in Poland. We wanted to check whether in a country with a large Power Distance it is possible to have the positive relation between employee participation, which assumes equality, and some functions of positive communication. At a score of 72, Poland is a hierarchical society. This means that people accept a hierarchical order in which everybody has a place and which needs no further justification. Hierarchy in an organization is seen as reflecting inherent inequalities, centralization is popular, subordinates expect to be told what to do and the ideal boss is a benevolent autocrat. Thus, the equality in Poland should rather be related to emotional function, connected with the creation of interpersonal relationships within a company rather than motivating or integration supporting functions. Paralleling the arguments above, we therefore advance the following hypotheses:

H2: *Employee participation in corporate governance is positively related to the emotional function of positive internal communication.*

Role of a leader and communication. The above hypothesis focuses on the relations between the democratization of governance and positive internal communication. This one looks at the behaviour of middle managers in creating positive internal communication. Middle managers in an organisation, unlike the directors at the top, do not set the agendas, they carry them out (Osterman, 2008: 5). Warren Bennis (1989: 45-46) states that "the manager's job is to plan, organize and coordinate. The leader's job is to inspire and motivate". However, the effective leadership is not limited to the very top of an organisation, and leadership does not automatically reside in a single individual (Bass, 1990). Osterman (2008:2) proves in his research that middle managers have as much to say about organisational success or failure as do those at the top. On the daily basis, middle managers mediate between teams and departments within an organisation and between different interests and are making key decisions about those trade-offs. They spend a great deal of their time in informal interactions, they work across organisational boundaries (Kalińska, 2013: 92). Among various middle manager's roles Floyd and Woolridge (1997:467) cover synthesising information (e.g. gather and convey information), championing (e.g. search for new opportunities, evaluate the merits of new proposals), facilitating adaptability (e.g. encourage informal discussion) and implementing deliberate strategy (e.g. translate goals into action plans). Some of the tasks require taking up the role of a leader. Does the role of a leader help a middle manager establish

positive communication with their subordinates? As we mentioned above, in Poland Hofstede's Power Distance is particularly large, and it will probably influence the perception of positive communication functions. That is why we would like to propose the following hypothesis:

H3: The role of a leader taken by middle managers is positively related to the motivating function of positive internal communication.

2 Method

The research was part of a bigger study and was conducted in a few steps. First, a Delphi method with 14 management experts preceded our quantitative studies. Management experts were either management practitioners (mostly on boards of various companies) or management professors. The experts expressed their opinions on, among others, the elements of leadership and positive internal communication. Finally, the questionnaire comprised of 53 statements including in 9 questions, where each question covered another area of the organizational behaviour, among others others middle managers, leadership, employee relationships and internal communication. Next we carried out our quantitative study. We collected the data in a form of a questionnaire (on-line and paper versions) which was distributed among the largest companies in Poland (the list of 500) recognized to be market leaders. The questionnaire respondents could select the degree to which they agreed with a statement on the scale between 0% and 100% (the degree changing every 10%). We obtained 73 replies and carried out in-depth interviews with board members in 10 companies. In this sample there was a dominance of large (i.e. employment over 250) Polish companies (100% of Polish capital), representing production sector, with average employee age of 30-40 years.

We measured managerial behaviour in the course of quantitative research using 13 items in the form of statements numbered 1-13 in Table 1. We adapted the items from Stankiewicz (2010) positive organisational potential scale. We measured positive internal communication using 4 items in the form of statements numbered 14-17 in Table 1. Because the measurement of positive internal communication varies across the studies, on the basis of literature (Ruck, 2012; Mayfield, M. Mayfield, J. Kopf, J. 1995; Sullivan, 1988) we have developed the items through the Delphi method. Thus, in conjunction with these opinions, we developed items tapping the specific functions of positive internal communication. The statements were rated by company representatives on a frequency scale ranging from 0% (never) to 100% (always).

We applied Pearson correlations and linear regressions using the statistical SPSS software package.

3 Results

Table 1 displays descriptive statistics and a correlation matrix for all the variables. We tested our hypotheses using linear regression analyses. We conducted four regression analyses to assess the interaction between managerial behaviour variables and each variable of positive internal communication. In our analyses, we reduced the number of factors gradually excluding the least significant ones from our 4 models. In order to remove the statistically insignificant variables we used a posteriori reasoning. Consequently, in Table 2 we present the regression models with the statistically significant variables.

Table 1 Means, Standard Deviations, and Correlations

Variable	Mean	s.d.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1.	74.93	24.21																
2.	79.72	22.60	.81**															
3.	83.69	25.02	.45**	.54**														
4.	73.15	21.00	.23	.28*	.87													
5.	74.38	20.20	.36**	.43**	.10	.84**												
6.	62.46	25.26	.34**	.33**	.03	.76**	.81**											
7.	71.64	23.51	.41**	.40**	.18	.69**	.76**	.74**										
8.	61.23	23.74	.54**	.47**	.22	.63**	.65**	.61**	.68**									
9.	71.11	22.80	.44**	.44**	.19	.65**	.64**	.61**	.67**	.72**								
10.	61.80	37.16	.30**	.45**	.28*	.14	.26*	.29*	.35**	.20	.28*							
11.	80.00	19.86	.50**	.53**	.28*	.54**	.54**	.57**	.54**	.60**	.61**	.42**						
12.	76.57	17.42	.51**	.53**	.38**	.58**	.65**	.60**	.65**	.65**	.69**	.43**	.84**					
13.	84.38	13.84	.47**	.50**	.28*	.54**	.56**	.55**	.49**	.52**	.59**	.33**	.80**	.72**				

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14.	63.15	25.32	.46**	.48**	.25*	.41**	.50**	.51**	.46**	.40**	.44**	.55**	.62**	.63**	.53**			
15.	70.82	21.52	.57**	.55**	.29*	.56**	.56**	.56**	.52**	.60**	.60**	.38**	.78**	.75**	.65**	.78**		
16.	73.01	21.58	.47**	.47**	.25*	.57**	.60**	.55**	.57**	.59**	.62**	.41**	.80**	.79**	.68**	.76**	.91**	
17.	73.15	23.97	.47**	.56**	.33**	.43**	.46**	.45**	.49**	.53**	.53**	.48**	.75**	.70**	.61**	.77**	.84**	.85**

n = 7, * p<.05, ** p<.001.

Variables:

- 1 Company has established the mechanisms for cooperation with stakeholders in order to generate shared values
- 2 A company conducts the transparent and effective information policy towards its stakeholders
- 3 A company has established transparent procedures for corporate governance and executive management, including in particular the hiring and remuneration procedures
- 4 Managers are the real leaders in their teams
- 5 Managers coordinate their teams and foster relations
- 6 Managers coach the members of their teams
- 7 Managers capture and disseminate information on business goals and objectives
- 8 Managers initiate changes in the company
- 9 Managers are oriented to self-development and increasing their skills and competencies
- 10 The mechanisms for employee participation in corporate governance bodies are in place
- 11 The top management provides a positive model of relationships with employees
- 12 The middle management provides a positive model of relationships with employees
- 13 Supervisors strengthen trust and the climate of justice
- 14 Message senders analyse the emotions of their interlocutors and adjust the form of communication to them
- 15 Internal communication enhances employee motivation
- 16 Internal communication fosters integration among employees
- 17 Internal communication consistently and coherently explains the organisational values to be respected

Hypothesis 1 predicts positive relationships between top management behaviour and positive internal communication. Table 1 shows a significant bivariate relationship between setting a good example by top management and all four functions of positive internal communication: emotional function ($r = .62$, $p < .001$), motivational function ($r = .78$, $p < .001$), integration-supporting function ($r = .80$, $p < .001$), and culture-creating function ($r = .75$, $p < .001$). The patterns of the raw correlations are consistent with past research. Furthermore, the final regression analyses (Models 1-4) indicate that top management behaviour would be the best predictor of all four elements of positive internal communication: sharing feelings or empathic function ($b = .43$, $s.e.=0.11$, $t(64)=3.03$, $p = .004$), motivation supporting function ($b = .44$, $s.e.=0.14$, $t(63)=3.2$, $p = .002$) integration supporting function ($b = .50$, $s.e.=0.13$, $t(64)=3.76$, $p = .0004$) and explaining and supporting culture function ($b = .58$, $s.e.=0.17$, $t(54)=3.43$, $p = .001$).

Thus in support of Hypothesis 1 top management behaviour significantly predicted positive communication.

Table 2 Results of the regression analysis with significant parameters

Variables	Model 1		Model 2		Model 3		Model 4	
	sharing feelings or empathic		motivation supporting		integration supporting		explaining and supporting culture	
Constant	-6.52148		-14.1503		-9.72451		-8.58183	
1. Company has established the mechanisms for cooperation with stakeholders in order to generate shared values			0.17	**				
4. Managers are the real leaders in their teams			0.18	**				
5. Managers coordinate their teams and foster relationships	0.27	**			0.17	*		

10. The mechanisms for employee participation in corporate governance bodies are in place	0.24	***					0.11	*
11. The top management provides a positive model of relationships with employees	0.43	***	0.44	***	0.50	***	0.58	***
12. The middle management provides a positive model of relationships with employees			0.31	*	0.39	**	0.36	*
R ²	0.51		0.71		0.71		0.63	

* p < .10; ** p < .05; *** p < .01

Second, Hypothesis 2 predicts positive relationships between employee participation in corporate governance and emotional function of positive communication. Table 1 displays a significant bivariate relationship between employee participation and emotional function ($r = .55$, $p < .001$). In the final regression Model 1 (Table 2), besides employee participation ($b = .24$, $s.e.=0.07$, $t(64)=3.65$, $p = .0005$), the other statistically significant variables, are top management behaviours (as discussed in Hypothesis 1) and managers who coordinate their teams and foster relationships ($b = .27$, $s.e.=0.13$, $t(64)=2.1$, $p = .04$). The results are consistent with Hypothesis 2.

Finally, Hypothesis 3 predicts positive relationships between the leader role of middle managers and motivating function of positive communication.

Table of correlations shows a significant relationship between the leader role and the motivating function ($r = .56$, $p < .001$). Moreover, this interaction is displayed in Model 2 of the final regression ($b = .18$, $s.e.=0.08$, $t(63)=2.07$, $p = .04$), which supports Hypothesis 3.

The final regression analysis (Table 2) showed the most significant variables for particular functions of positive internal communication. And thus, the independent variables that predicted sharing feelings or emphatic function of positive communication (Model 1) were the following: top management behaviours (as discussed above in Hypothesis 1), the existence of mechanisms for employee participation in corporate governance bodies (as discussed in Hypothesis 2) and the fact that middle managers coordinate their teams and foster relationships ($b = .27$, $s.e.=0.13$, $t(64)=2.1$, $p = .04$). In Model 2, the motivation supporting function is preceded by top management behaviours (as discussed above in Hypothesis 1), the fact that managers are the real leaders in their teams (as discussed in Hypothesis 3) and in a company the establishment of the mechanisms for cooperation with stakeholders in order to generate shared values ($b = .17$, $s.e.=0.07$, $t(64)=2.36$, $p = .02$). Further, in Model 3 the integration supporting function of positive communication is predicted by top management behaviours (as discussed above in Hypothesis 1), the middle management behaviours ($b = .39$, $s.e.=0.17$, $t(64)=2.31$, $p = .02$) and the fact that middle managers coordinate their teams and foster relationships ($b = .17$, $s.e.=0.09$, $t(64)=1.8$, $p = .08$). Finally, in Model 4, top management behaviours (as discussed above in Hypothesis 1), middle management behaviours ($b = .36$, $s.e.=0.2$, $t(64)=1.84$, $p = .07$) and mechanisms for employee participation in corporate governance bodies ($b = .11$, $s.e.=0.06$, $t(64)=1.8$, $p = .05$) predict the explaining and supporting culture function of positive internal communication.

4 Conclusion

Generally speaking, this study enhances researcher's understanding of the role that managerial behaviour can play in creating positive internal communication in Polish companies. We developed our definition of positive internal communication and operationalised its elements on the basis of literature review and our own research.

In this study, we used the theory and research from the Anglo-Saxon database to reconsider and build upon several aspects of governance and its relationships with positive internal communication in Polish companies. First we checked the impact of top management behaviours on the positive communication. We demonstrated on our sample that in Polish environment it is top management behaviour that is more important for the creation of positive communication than the middle management behaviour. Anglo-Saxon studies (Larkin & Larkin, 1994) have consistently shown the importance of communicating through frontline supervisors. The research shows that immediate supervisors are employees' preferred source of information and have more credibility with employees than do senior executives. In Poland, though, according to our research it is the top management and their behaviour that has more impact on positive internal communication. Secondly, we have checked and demonstrated the relationships between employee participation in corporate governance and emotional function of positive communication. And finally we considered the relationship between the leader role of middle managers and motivating function of positive communication.

Those results are consistent with our national large power distance dimension. In Poland people accept a hierarchical order in which everybody has a place and which needs no further justification. Our national power distance may be getting lower with the advent of democracy in 1989 and in line with the growth of a country's education and prosperity (Hofstede, 2001) as Poland has doubled its GDP in the last 20 years, still, hierarchy in an organization is seen as reflecting inherent inequalities, centralization is popular, subordinates very often expect to be told what to do. However, in a company the real goal of creating the two-way communication is not merely to tell employees what their executives want them to do or inform executives what customers are saying. The ultimate prize is to engage all employees, improve their abilities to make informed decisions, and turn them into active advocates for the organization.

5 Limitations and future directions

Despite the strengths, several limitations of our study should be addressed in future research. First, we have carried out research on the basis of the Anglo-Saxon literature and studies, however, we did not apply exactly the same items and measures in our quantitative study. It would be worth while carrying out similar research in an Anglo-Saxon country to compare the hard results. Second, we had problems with involving Polish companies into our research and that resulted in a relatively low questionnaire return rate (73 out of 500), and we should find the ways to improve it. One of the methods could be to get involved next into a more ethnographic/qualitative research of positive internal communication rather than concentrate on the quantity. Moreover, the evidence supporting Hypothesis 3 of our research predicting positive relationships between the leader role of middle managers and motivating function of positive communication should be developed as it still needs more research to prove its validity. Finally, our future research could also more robustly examine the correlations between the elements of the positive internal communication.

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**SECTION 3
CONTEMPORARY MARKETING: INSPIRATION AND
IMPLEMENTATION**

*IMPACT OF PERFORMANCE EXPECTANCY AND EFFORT EXPECTANCY ON
THE ELDERLY CONSUMERS' BEHAVIOUR REGARDING ACCEPTANCE AND
USE OF TECHNOLOGICAL PRODUCTS: AN EMPIRICAL RESEARCH IN
POLAND*

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Abstract

Purpose of the article Aging is a universal process worldwide and nowadays it is becoming a new peremptory challenge in different fields. The role of elderly consumers is permanently growing in Poland. This research sheds light on the issues of elderly consumers and their expectancies towards a new and innovative technological product. The study explores two components: performance expectancy and effort expectancy regarding the acceptance and use of mobile phones.

Methodology/methods The study employed the PAPI survey for targeting the elderly touch mobile phone 'smartphone' users. The test took part at the turn of 2014-2015. The data were collected from elderly people who took part in lectures at Third Age Universities in the Pomerania Voivodship in Poland. The structural model was employed to test the research hypotheses. Baseline descriptive statistic and confirmatory factor analysis were used for in-depth analysis.

Scientific aim The aim of the paper is to present the outcomes of empirical research conducted among the Polish elderly consumers.

Findings The research outcomes suggest that consumer innovativeness (CI) affects performance expectancy (PE) and effort expectancy (EE) regarding the acceptance and use of the mobile phone by elderly people. There are significant relationships between consumer innovativeness and performance and effort expectancies but positively between CI and PE and negatively between CI and EE. Furthermore, performance and effort expectancies affect attitudes towards innovation regarding the acceptance and use of the mobile phone by the elderly and in this case both relationships are positive.

Conclusions From the theoretical perspective, a research model consisting of CI, PE, EE and ATI was developed and these complex factors which affect purchasing and using innovative technological products by the elderly have been better understood. For practitioners, this study reveals that marketers of new products should stress incorporating the usefulness of the product in the daily life of the elderly. They should communicate that the minimum of experience is needed to be skilled at using technological devices and if consumers are over 60 obtaining the desirable skills will be almost effortless for them.

Keywords: elderly consumer, product innovation, consumer innovativeness, performance expectancy, efforts expectancy, attitudes toward innovation

JEL Classification: D12, M31, J14

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Introduction

The Western society is becoming more and more gray and the process of global aging is irreversible. Globally, the number of older people will rapidly increase to 2 billion by 2050 (WHO, 2015). In Poland, the percentage of people who are at least 65 was below than 15% in 2013. According to the forecasts, in 2050 people aged 65+ will represent almost 33% of the population, and the number of the elderly will increase by 5.4 million compared to 2013. Poland will become one of the ten oldest nations on the world in 2050 with average age of 51.8. Such a demographic change of the Polish population is a new challenge for marketers, especially for companies that focus on innovative products. The latter have become more popular in the portfolios of Polish companies and dedicated mostly to young generations. The 'old' consumers of these innovations seem to be overlooked by business. Adoption of innovation by society depends on consumer innovators who play a role of the earliest buyers of novelty. Different studies suggest that age is one of important moderating factors influencing consumers behaviour and their attitudes toward innovation, but elderly consumer are usually classified as a late majority or laggards not willing to buy new products (Rogers, 1962). In Poland, aging is not commonly associated with innovations but soon the incoming demographic changes will probably modify such an approach of companies. Lack of grounded knowledge of elderly's behaviour and attitudes underlies the concept that technological innovations are reserved mostly for young and this idea dominates in practice. Thus, it appears that a need for better understanding elderly consumers' behaviour exists and exploring the determinants influencing the elderly attitudes toward innovation becomes a must at home.

Current studies have mostly focused on the elderly consumer innovativeness and their behavioural intentions, but rarely connected the issue with consumer attitudes toward innovation. Even though it is regarded as one of the most powerful predictors of behaviour in psychology. Technological innovations are perceived through the predictors as performance expectancy and effort expectancy. These factors seem to be more important for elderly users (Venkatesh, Thong & Xu, 2012; Eastman & Iyer, 2004; Arenas-Gaitán & Peral-Peral, 2015) as well as paying more attention by this group to the functionality of products than novelty of itself (Badowska, Zamojska & Rogala, 2015). Consumer expectancies influence the purchase process and can be one of the strong moderating factors. Therefore, the objectives of this study are the following: firstly, to identify elderly consumers' behaviour toward innovative technological product; secondly, to establish and verify the interplay between consumer innovativeness, performance expectancy and effort expectancy of technological innovation and elderly people's attitude towards innovation; and thirdly, to explore what the character and direction of the relationships between elderly consumers' innovativeness, performance expectancy and effort expectancy and attitudes toward innovation are. The outcomes will help companies to shape their marketing strategies and support launching new products on the market of the elderly.

1 Literature review

1.1 Consumer attitudes

In social psychology attitude is described as a tendency to favor or disfavor a particular object (Wojciszke, 2005). It can be developed toward any object, person, event or idea. There are three important components of attitude: emotional, cognitive and executive (Domachowski, 1999). The executive component refers to behavioural reactions to the attitude's object. The cognitive one underlies that controlled behaviour and the emotional one is linked to spontaneous behaviour. Two other important aspects of attitude are its strength and direction (Maison, 2004). The direction indicates if the attitude is positive, neutral or negative. Negative attitude results in avoiding the attitude object but strong and positive attitude triggers the tendency to move toward the object. In marketing, it would mean that consumers avoid or buy products. The influence of attitude on human behaviour may make attitudes a reliable indicator of consumer behaviour. It is confirmed that product-specific attitude does correlate with consumer behaviour (Pelsmacker & Janssens, 2007). As it is also commonly believed attitudes are relatively consistent in time and difficult to change. It is not advisable to try changing consumers attitudes but adjust the product or brand to them (Kotler, Armstrong, Saunders & Wong, 1999). Thus, it is important for marketers to explore existing consumers attitudes and plan the marketing strategy in accordance to them.

Attitude toward technological innovation is a construct which measures the consumer's level of interest in the new product. Many of the conventional adoption dimensions are not always relevant to technological innovations (Hirunyawipada & Paswan 2006; Truong, 2013).

1.2 Consumer innovativeness

The basic approach to innovativeness defines it as adopting new products earlier than other members of the same social system (Rogers & Shoemaker, 1971). In more expanded perspective it is seen as being receptive to

new ideas and making innovative decisions independently of others - driven by personality 'innate innovativeness' (Midgley & Downling, 1978). Innovativeness is also a tendency to being attracted to new and buying different products rather than continuing the same consumer patterns (Steenkamp, Hofstede & Wedel, 1999). Innovativeness is linked to impulsivity and risk taking (Venkatraman & Price, 1990). Also, it is connected with desire to gain information about new products and being driven by novelty-seeking behaviour (Hirschman, 1980). Considering time of adoption new products, individuals are usually categorized to: innovators/adopters (technology enthusiasts), late majority (skeptical) and laggards (traditional). The degree of adopting new products by innovators has the biggest impact on whether the product succeeds on the market (Rogers, 1962; Rogers & Shoemaker, 1971; Moore, 1991). Innovativeness is treated as a component of human personality (Kirton, 2003) and divided into general innovativeness and domain-specific innovativeness (Flynn & Goldsmith, 1993). A domain-specific innovativeness approach reflects the tendency to learn about and adopt new products within a specific domain of interest (Goldsmith & Hofacker, 1991). Such narrowly defined product category enables predicting adoption of innovative products better (Gatignon & Robertson, 1985). The distinction between domain-specific innovativeness and global innovativeness was noted (Flynn & Goldsmith, 1993) as well as differences in innovativeness between countries (Tellis, Yin & Bell, 2009; Truong, 2013). Szmigin and Carrigan (2000) adapted the Goldsmith-Hofacker Domain Specific Innovativeness Scale (1991) on a group of elderly consumers and stated that the elderly tend to be less innovative than other consumer groups. However, as in other consumer groups, among elderly consumers there are also individuals who can be described as innovators. At the same time, it has been stressed that every new cohort of older consumers is different than the ones before it. The new age elderly change their activities and are willing to use innovative products more than people of the age 15 years ago (Żurawski, 2015). Consumer innovators purchase mobile phones more frequently than others, and also are faster to adopt new models of mobile phones (Wang, Wang, Yang, 2005).

1.3 Performance expectancy and effort expectancy

The unified theory of acceptance and use of technology (UTAUT and UTAUT2) is a comprehensive synthesis of prior technology acceptance researches. UTAUT has four components: performance expectancy, effort expectancy, social influence and facilitating conditions. These components influence behavioural intentions to accept technology and technology usage (Venkatesh, Thong & Xu, 2012). The model underwent several tests and proved superior to other competing models. It explains about 74 % of the variance in behavioural intentions to use technology and about 52% of variance in technology use (Venkatesh, Thong & Xu, 2012).

Performance expectancy (PE) is defined as the degree to which an individual believes that using technology will help him or her with achieving benefits in performing certain activities (Venkatesh, Thong & Xu, 2012). The root constructs of performance expectancy include perceived usefulness, the extrinsic motivation, the job fit and relative advantage (Venkatesh, Morris, Davis & Davis, 2003). PE is observed as a key construct in influencing the adoption of the mobile service (Park & Ohm, 2014; Park & Kim, 2014).

Effort expectancy (EE) refers to the degree of the ease of use. Its root constructs are the following: perceived ease of use, complexity and ease to learn (Venkatesh, Morris, Davis & Davis, 2003) and the extent to which a person believes that the use of technology will be free of effort (Gwebu & Wang, 2011). EE is one of the important factor in the mobile technologies domain and f.e. mobilephones which are easy to use were directly linked with shopping intention (Agrebi & Jallais, 2015).

Performance expectancy and effort expectancy are the most important determinants when analyzing the influence of using technology on behavioural intention (Venkatesh, Thong & Xu, 2012). Among consumers 55+ performance expectancy and effort expectancy are important antecedents for behavioural intentions of using internet banking (Arenas-Gaitán & Peral-Peral, 2015). Proper communication that encourage the elderly to try an innovative product should highlight the advantages of using them. Providers of innovative products can offer discount, gifts and other services for the elderly, which are highly valued by them. The greater use of innovative product would effect increased performance expectancy and effort expectancy and that would lead to increased behavioural intention of older consumers (Arenas-Gaitán & Peral-Peral, 2015).

2 Methodology

The purpose of the research is to shed light on the issues of elderly consumers and their expectancies towards a new and innovative technological product on the expample of touch mobile phones. The study aim is to identify the impact of two components: performance expectancy and effort expectancy on the elderly consumers' behaviour regarding the acceptance and use of new product. These components were selected from four components of UTAUT and both of them belong to a group of general consumers' expectancies toward products.

The study employed the PAPI survey for targeting the elderly touch mobile phone 'smartphone' users. The study instruments were pre-tested in order to avoid any vagueness and fuzziness in the questionnaire, which could ultimately affect both the reliability and validity of this research. The test period began in November 2014 and finished in October 2015. Over 720 questionnaires were distributed and 527 questionnaires were completed however, 11% of them were discarded owing to missing data, namely 89% were usable questionnaires.

Authors hypothesized that:

H1. Consumer innovativeness affects performance expectancy regarding the acceptance and use of mobile phones by elderly people.

H2. Consumer innovativeness affects effort expectancy regarding the acceptance and use of mobile phones by elderly people.

H3. Performance expectancy affects attitudes toward innovation regarding the acceptance and use of mobile phones by elderly people.

H4. Effort expectancy affects the attitudes toward innovation regarding the acceptance and use of mobile phones by elderly people.

The data were collected from elderly people who took part in lectures at Third Age University in the Pomerania Voivodship in Poland. Finally, this effort resulted in 127 respondents-owners of touch screen mobile phones (smartphones) (81% females and 19% males) among all the 468 elderly people. In the smartphone group, 73% were at the age between 60-69 and 20% between 70-79 (6% at the age 50-59 and 1% at the age 80 and more). 50% of senior smartphone users declared a university degree, 49% secondary education and 1% vocational education. One notable characteristic of the respondents was that approximately 63% recognized their 'smartphone' as new products (15,9% as definitely new and 47,7% new) and about 87% respondents perceived them as innovative ones (13,9% as definitely innovative and 73,3% innovative).

The research included four constructs as impacting user intention. The constructs were measured on a five-point Likert scale ranging from (1) strongly disagree, to (5) strongly agree. The three-step approach was used in data analysis. Firstly, a preliminary analysis was conducted to provide baseline descriptive statistic. Secondly, a confirmatory factor analysis was employed to test the proposed model. Thirdly, the structural model was used to test the research hypotheses representing the relationships between the independent and dependent variables (Fig. 1). Statistica 12 software was employed to analyze and evaluate the data.

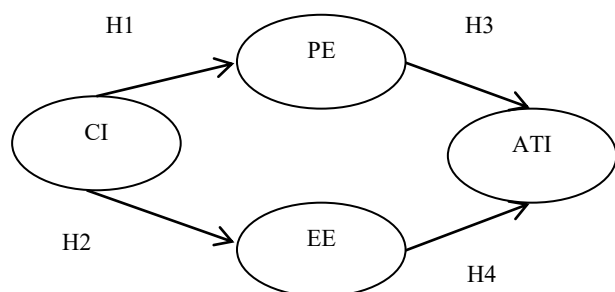


Figure 1 Structural model

Table 1 Item loadings

	Item	Factor			
		1	2	3	4
CI	1	0.310	-0.234	0.467	0.404
CI	2	0.125	-0.169	0.773	0.141
CI	3	-0.030	0.326	0.750	0.057
CI	4	0.401	0.097	0.519	0.010
ATI	5	0.321	0.277	-0.165	0.691
ATI	6	0.121	0.105	0.195	0.732
ATI	7	0.059	0.160	0.182	0.809
ATI	8	0.566	0.516	0.027	0.403
PE	9	0.563	0.444	0.025	0.301
PE	10	0.833	0.138	0.252	-0.025
PE	11	0.860	0.125	0.052	0.126
PE	12	0.832	0.058	-0.045	0.190
EE	13	0.013	0.790	0.068	0.289
EE	14	0.190	0.899	-0.019	0.151
EE	15	0.122	0.925	0.035	-0.029

Source: authors' calculations

Using principal component analysis and raw varimax rotation, the authors found that the 11 items loaded correctly with their corresponding factor, with 10 loadings above 0.7 and 1 loading 0.691 (this item appeared as

the next additional factor which was taken into account in the risk group factors). All the factors explain 69% of the 15 used items. Despite of that, the authors were able to construct the model accordingly with the initial assumptions. Table 1 shows the items and their corresponding factors as provided by Statistica 12. As a rule of thumb, if the factor loading of any variable on a factor is equal or more than 0.7, then it should belong to that factor. The reason for choosing 0.7 factor loading as a cut off point is that because factor loading represents correlation coefficient hence at least 49% (=0.7²) variability of the variable must be explained by the factor to which it belongs. However, other variables whose loadings are < 0.7 can also be identified in that factor on the basis of its explainability.

We used a combination of relative indices: GFI Joreskog, Delta Bollen, Bentler-Bonett and noncentrality-based indices (RMSEA) as the following: Gamma, McDonald and RMSEA Steiger-Lind to assess the fit of a structural model. This combination provided a ground for assessing model fit using some of the most reliable and sample size-independent indices. Some indices met the recommended threshold: Gamma (0.948~0.95), RMSEA (0.087<0.5), Delta Bollen (0.914 close to 1), Bentler-Bonett (0.911 close to 1). Two of the used indices are pretty close to the thresholds (GFI Joreskong 0.866 and McDonald 0.859). Therefore, the model presented quite good fit and acceptable configural invariance. To test metric invariance, it was observed the difference between a constrained versus an unconstrained model in Statistica.12, and found that the difference was significant ($\chi^2(40)=69.72$ [p-value=0.002]).

3 Results and discussion

Tables 2 and 3 provide the results of the analysis. As a result of this study H1, H2, H3, H4 hypotheses were accepted.

With the acceptance of H1, it has been found that consumer innovativeness affects performance expectancy regarding the acceptance and use of the mobile phone by elderly people (0.213). The test supports that there is a significant positive relationship between consumer innovativeness (CI) and performance expectancy (PE) in the acceptance and use of the mobile phone by elderly people.

Hypothesis 2, consumer innovativeness affects effort expectancy regarding the acceptance and use of the mobile phone by elderly people, and it was supported as predicted (-0.241). There is a significant but negative relationship between consumer innovativeness (CI) and effort expectancy (EE) in the acceptance and use of the mobile phone by elderly people.

With the acceptance of H3, it has been found that, performance expectancy affects attitudes towards innovation regarding the acceptance and use of the mobile phone by elderly people (0.238). There is a significant positive relationship between performance expectancy (PE) and attitudes toward innovation (ATI) in the acceptance and use of the mobile phone by elderly people.

Hypothesis 4, effort expectancy affects the attitudes toward innovation regarding the acceptance and use of the mobile phone by elderly people, and it was supported as predicted (0.412). There is a significant positive relationship between effort expectancy (EE) and attitudes toward innovation (ATI) in the acceptance and use of the mobile phone by elderly people.

Table 2 Hypotheses, results and findings of the analysis

Hypotheses	Relationships	Coefficient	Significance (YES/No)	Results
H1. Consumer innovativeness affects performance expectancy regarding the acceptance and use of mobile phones by elderly people	Consumer Innovativeness (CI)->Performance Expectancy (PE)	0.213	Yes	Supported (*)
H2. Consumer innovativeness affects effort expectancy regarding the acceptance and use of mobile phones by elderly people	Consumer Innovativeness (CI)-> Effort Expectancy (EE)	-0.241	Yes	Supported (**)
H3. Performance expectancy affects attitudes toward innovation regarding the acceptance and use of mobile phones by elderly people	Performance Expectancy (PE)-> Attitudes Toward Innovation (ATI)	0.238	Yes	Supported (*)
H4. Effort expectancy affects the attitudes toward innovation regarding the acceptance and use of mobile phones by elderly people	Effort Expectancy (EE)-> Attitudes Toward Innovation (ATI)	0.412	Yes	Supported (**)

*significant at p<0.1; **significant at p<0.05

Source: authors' calculations

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Table 3 Sub-factors and respondent's results

Construct	Items		strongly disagree (1)	disagree (2)	neither disagree nor agree (3)	agree (4)	strongly agree(5)
	no	specific item					
Consumer innovativeness (CI)	1	Overall, I'm interested in the latest technology of touch mobile phones 'smartphones'.	9%	27%	21%	36%	7%
	2	I often visit a section with touch mobile phone products in a department store or supermarket.	35%	36%	19%	5%	6%
	3	I know more about touch mobile phones than other people do.	20%	37%	25%	16%	2%
	4	If I needed to use a touch mobile phone called a 'smartphone', I would buy the latest one available.	18%	37%	14%	22%	9%
Performance expectancy (PE)	5	I find a touch mobile phone called a 'smartphone' useful in my daily life.	1.2%	2.5%	11.1%	69.1%	16%
	6	I consider that using a touch mobile phone called a 'smartphone' increases my chances of achieving things that are important to me.	4.9%	8.6%	28.4%	44.4%	13.6%
	7	I consider that using a touch mobile phone called a 'smartphone' helps me do/make/accomplish things more quickly.	2.4%	15.7%	21.7%	45.8%	14.5%
	8	I consider that using a touch mobile phone called a 'smartphone' I can do more things daily.	2.4%	10.8%	28.9%	44.6%	13.3%
Efforts expectancy (EE)	9	I consider that learning how to use a touch mobile phone called a 'smartphone' is easy for me.	1.2%	11.9%	33.3%	42.9%	10.7%
	10	I consider my interaction with a touch mobile phone called a 'smartphone' is clear and understandable.	0%	9.6%	27.7%	53%	9.6%
	11	I consider that it was quickly and easy for me to become skilled at using a touch mobile phone called a 'smartphone'.	2.4%	7.3%	31.7%	46.3%	12.2%
Attitudes toward innovation (ATI)	12	Overall, a touch mobile phone called a 'smartphone' is an interesting product for me.	6%	8%	6%	68%	12%
	13	I would like to try a newer version of a touch mobile phone called a 'smartphone'.	5%	17%	17%	51%	11%
	14	I would probably take a look at a touch mobile phone called a 'smartphone' in a store.	5%	20%	11%	53%	11%
	15	Overall, I like a touch mobile phone called a 'smartphone' as a product.	4%	5%	17%	59%	16%

Source: authors' calculations

The research employed a consumer innovativeness concept, TAM and UTAUT to examine how consumer innovativeness, performance and efforts expectancies interplay with the elderly consumers attitudes toward innovation. The findings revealed that the proposed model could predict the consumer innovativeness of elderly people and their attitudes toward touch screen mobile phones 'smartphones' pretty well. The outcomes show that among elderly people, consumer innovativeness (CI) positively affects performance expectancy (PE) regarding the acceptance and use of smartphones. It seems to be natural that the more people show innovative behaviour the more allegedly they will observe the new possibilities which the product delivers. They expect that the innovation will be useful quickly for them at home or work. The findings confirm the negative relationship between consumer innovativeness (CI) and effort expectancy (EE). This results fit out assumption that the users, who present innovative approach to products, perceive a lower level of effort to understand and learn it and achieve desirable skills more easily and quickly.

The research reveals that performance expectancy (PE) affects attitudes toward innovation (ATI). Elderly consumers perceive performance expectancy at high level regarding the use of touch mobile phones. They assess smartphones usefulness in their daily lives e.g. helping them to increase chances of achieving their important things (58% agree and strongly agree), accomplishing things more quickly (60.3% agree and strongly agree), and doing more things day by day (57.9% agree and strongly agree). All of that could clarify positive attitudes toward smartphones by elderly people. Thus, the higher level of performance expectancy, the more positive attitudes toward innovation elderly consumers present.

The study presents that effort expectancy (EE) positively affects attitudes toward innovation. The elderly perceive efforts expectancy of using smartphones at low level. They consider that 'smartphones' are easy to learn (53.6% agree and strongly agree), clear and understandable (62.6% agree and strongly agree) and make them skilled at using quickly (58.5% agree and strongly agree). These demonstrate that elderly users attach low importance to the effort of using touch mobile phones by them and it may explain positive attitudes toward this mobile technology. So, the lower level of effort, the more positive attitudes toward innovation elderly consumers present.

Additionally, the obtained results reveal quite interesting phenomena. Firstly, a high degree of consumer innovativeness (CI) co-exists with a high level of performance and effort expectancies (PE positive & EE negative) regarding the acceptance and use of innovative product. Furthermore, the higher level of perceiving the performance expectancy (PE) and effort expectancy (EE) of the innovative product, the higher the level of the attitudes toward this innovative product (ATI). It suggests that directly stressing easyness of innovative product use straightly may be inadequate for innovators. The likely cause is that the innovators who perceive the innovation as simple, easy and effortless, may reject the product as uninteresting, devoicing of challenges and without positive effects. But also the outcomes indicate that for innovators when the product is more complicated than the non-innovative one, has got more functions and more technological advanced it is, the better the product is evaluated by this consumer group. These elderly users who regard themselves as innovators and assess subjectively the higher difficulty of effort expectancy, they accept the innovation better. Moreover, the higher degree of attitudes toward the innovation the 'old' innovators represent.

4 Conclusions

The objective of this investigation was to obtain more insight into the components influencing acceptance and use of touch mobile phones 'smartphones' by elderly consumers. This study proposes a model for explaining the impact of elderly consumer innovativeness and their attitudes toward touch mobile phone 'smartphone' still regarded as technological innovation by the Polish elderly. This model incorporates the explanatory variables from the UTAUT - performance expectancy and effort expectancy as the important drivers which affect the elderly attitudes toward technological innovation. This result suggests that consumer innovativeness is positively related to performance expectancy and affects it but it is negatively related to effort expectancy. Performance and effort expectancies are positively related to consumer attitudes toward technological innovation and affect it, and they are strong predictors in the group of elderly consumers in Poland.

From the theoretical perspective, a research model consisting of CI, PE, EE and ATI was developed and these complex factors which affect purchasing and using innovative technological products by the elderly have been better understood.

For practitioners, this study reveals that managers should take the elderly markets into account while launching new technological products and not limit the market to the young generations' segments. Marketers of new products should stress incorporating the usefulness of the product in the daily life of the elderly. They should communicate that the minimum of experience is needed to be skilled at using technological devices and if consumers are over 60 obtaining the desired skills will be almost effortless for them.

This research has several limitations. The first limitation concerns generalizability of the findings. As our study was conducted in Pomerania Voivodship in Poland, which has quite low penetration rate for smartphones, thus the findings may not apply to countries that are more technologically advanced. The second one, the study cannot be representative for all the elderly in Poland. The sample was taken into account to support a higher number of respond rate. In the group, people with secondary and university degree are represented mostly, and women usually are more common students of third age universities than men in Poland. Thus, these findings may require modification in other sociodemographic and geographical domains. A third limitation is the number of respondents. Only 115 elderly people declared using smartphones in the sample which makes the findings difficult to compare. Ultimately, we have studied only one type of technology (i.e., smartphones).

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CHILDREN'S INFLUENCE ON THEIR PARENTS' PURCHASE DECISION: SYSTEMATIC ANALYSIS OF RESEARCHES BETWEEN 1985-2014

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Abstract

Purpose of the article Children's influence on their parents' purchase decision was examined in more than 270 articles published in a period of 1985 – 2014. The purpose of the article was to systemize previous findings on children impact on parent's purchase decisions, and to determine whether applied methodology (qualitative vs quantitative and number of respondents), country's factors and time have impact on reported evidence of children influence on parents' purchase decisions. Besides we were aiming to determine how strong is the influence, has the evidence changed over the period of 30 years.

Methodology/methods A systematic analysis of articles related to children influence on parents' purchase behavior available through nine major databases of social sciences was performed. Initial search allowed to select 278 articles published in a period of time 1985 – 2014. Three stages of screening a list of articles were employed to select 100 articles suitable for further analysis. Two raters evaluated an influence of children on their parents' purchase decision on selected categories using the established coding system. Finally, statistical analysis of findings was applied.

Scientific aim The scientific aim was to systemize previous findings about child's influence on parents' purchase decisions and find factors related to the context and methodology of the research that have influence on the reported evidence of children impact on parents' purchase decision strength.

Findings The results proved that a child has influence on his/her parents' decision to purchase products, but the influence was lower than scale's middle point. Based on analysis of 116 researches and using different statistical tests we proved that reported child's influence on his/her parents' decision to purchase products differed depending on a number of respondents, type of research (qualitative vs. quantitative) and year of research.

Conclusions The analysis showed that reported child's impact on his/her parents' purchase decision depends on used methodology and on the context of the research (year). Therefore, deeper analysis of various methods and scales for measurement of the influence has to be performed.

Keywords: child, purchase decision, consumer behavior, systematic analysis.

JEL Classification: M30, M39.

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Introduction

The effect of children's influence of parental purchase decision making has been under researchers' radars for over 40 years. To understand the nature and the methods of the influence used by children, a number of theories like power theory (Flurry and Burns, 2005; Bao et al., 2007) and resource exchange theory (Flurry, 2007; Carey et al., 2008) were borrowed from psychology. Other studies were built around consumer purchase decision model (Beatty and Talpade, 1994; Belch et al., 2005; Tinson et al., 2008; Akinyele, 2010). However, most common theoretical framework was related with consumer socialization theory (Foxman et al., 1988; Bakir et al., 2006; Watne et al., 2011; Sharma and Sonwaney, 2014; Balcarová et al., 2014).

Consumer socialization theory identifies a number of different types of agents contributing to the upbringing and development of children as consumers. Studies have shown a significant impact of school, peer groups, and media (Ali et al., 2013; Hota and McGuiggan, 2005) on children consumer socialization. One of the strongest effects was attributed to the intergenerational influence, which appears due to within-family transmission of information, beliefs, and resources from one generation to another through observations and/or joint family decision making (Chaudhury et al., 2011). Recent developments in communications, in particular, in the area of digital media have made dramatic changes in the consumer socialization landscape in last 20-30 years. According to Rideout et al. (2010), 8-18-year-old children spend more than 7 hours on average a day with media. Teenagers are voracious consumers of social media and the Internet content and they have grown up in the reconfigured world of on-line and off-line interaction where socialization and communication is really a matrix of activities (Zhao, 2006).

Since parents may lack a basic understanding of these new forms of socialization (O'Keeffe and Clarke-Pearson, 2011) children could have more influence on parents' decisions to buy products or even be more responsible for purchasing products by themselves. In order to examine the influence of children in increasingly digitized and socially connected world, the systematic analysis of scholar publications from major databases has been undertaken. More than 100 articles published in a period of time 1985 – 2014 were extensively examined with following main questions in mind: do children have influence on their parents' purchase decisions? If yes, how strong is the exerted influence? And how the strength of influence has changed over the 30-year period? In addition to the main questions, the current study also looked into differences stemming from different cultural and economic context. In particular, the study aimed to examine differences in extend and/or nature of children's influences in countries with different level of economic levels, i.e., developed vs. developing countries. Finally, the range of methodologies of data collection was examined with the purpose to understand whether or not the applied methodology impacts the reported results.

1 Methodology of systematic analysis

The first methodological issue was related with selection of articles for further analysis. Articles were selected in August 2015 from most acknowledge databases for social sciences, and especially marketing. Nine databases EBSCO, Emerald, JSTOR, Research gate, Sage Journals, Science direct, Springer link, Taylor and Francis and Willey made all population of articles. Four groups of keywords were used for selection of articles. First group was related with question Who? The main keyword was "child*", which generated such results as children, child's etc. In addition to this we used other keywords as "adolescent*", "teen*", "tween*". Another group of keywords were related with action. It included such words as "impact", "role", "participation", "involvement" and "influence". The third group was related with question Whom? In addition to main keyword "parent*", we used other words like "famil*", "mother*" and "farther*". The final group of keywords had such keywords as "purchas*", "consum*", "shopping", "buy*" and "decision". Additionally, manipulations were run by putting any of collateral arguments in article title, and 'adolescent' in text, and afterwards adding additional arguments, if the result was too vast. Manipulations for all arguments in text only led in more than several thousand entries that were quickly descending in relevance, since the keywords are repetitive in a vast number of social and psychological areas. Three step screening procedure was applied in order to select articles that suite the best to the purpose of the analysis.

Initially some criteria were used for selection of articles. We decided to use time period from 1985 till 2015. Therefore, all articles older than 1985 were not included in a final list of articles. The key criterion for articles' selection was the relevance to the topic of child influence on parents' purchase decision. Child influence in the selected articles was understood in the broadest sense of a concept, overwhelming all forms of perceived or objective, explicitly expressed or implicitly perceived child's influence on parents' decision to buy a product. In a similar manner, purchase of a product, was understood in the broadest sense, as actual or imaginary (recalled) decision to buy category and/or brand, with or without related decisions what price to pay, where, how much, etc. This primary screening of articles let us to develop a list of 278 articles (see Table 1).

Table 1 Initial population of articles according to databases

Database	EBSCO	Emerald	JSTOR	Research gate	Sage Journals	Science direct	Springer link	Taylor and Francis	Willey
Number of articles	95	44	12	41	15	25	10	17	19

During the next step of screening a list of articles was analyzed more deeply. First, we noticed that 40 articles were repetitive, therefore, we excluded them. Next, review of each article was performed. Articles that appeared to be in other than English language were excluded as well. Some articles which were not available as full text through the same databases and after extra check from other possible sources were removed. Plus, articles that did not report results of primary survey (literature review, theoretical developments) and working papers were removed. During this stage a number of articles were reduced to 176.

During third stage of articles' screening we evaluated all entries on the basis of suitability for the topic. Apparently, some entries analyzed only parent's purchase decision without employing child's influence (or role, participation in purchase decision making) as an empirically tested variable. Some articles analyzed child's influence on parents, but in purchase unrelated decision, such as a living place after parents' divorce, music preferences, health related issues, etc. Some articles analyzed child's purchase decision as influenced by external sources, like peers, media and parents among them. Another non-typical case included adult children's influence on parents' decision. The last stage of screening left 100 articles, which served as a total population of articles.

Articles were collected from such journals as Young Consumers (13 articles), Journal of Consumer Marketing (10 articles), Journal of Business Research (8 articles), Advances in Consumer Research (6 articles). We found 2-3 articles in such journals as Journal of Consumer Research, Journal of Marketing Management, Journal of Food Products Marketing, Journal of Consumer Behavior, Journal of International Consumer Marketing, Journal of Marketing Communications, Journal of the Academy of Marketing Science, Tourism Management. Finally, 46 journals had published just one article on this topic.

The second methodological issue was related with analysis of results from previous researches. Part of previous researches based their findings using means, other findings were based on percentages. Some authors measured influence of children on their parents' purchase decisions by employing a correlation between two variables, for example, child's request and actual purchase. Finally, qualitative researches were performed in some papers. Authors used different scales for measuring of children's influence on their parents' purchase decision – some of them have used five-point scale, other six or seven point scales, in some cases we found just calculation of points instead of means. In order to compare these results, measured with different scales, we divided each scale into five equal intervals. Table 2 shows how different measurements were recorded into one five-point system.

Table 2 Codes for converting articles' quantitative findings into five-point system.

Scale in an article	Very weak	Weak	Average	Strong	Very strong
4 point	1.0-1.6	1.61-2.2	2.21-2.8	2.81-3.4	3.41-4
5 point	1.0-1.8	1.81-2.6	2.61-3.4	3.41-4.2	4.21-5
6 point	1.0-2.0	2.01-3.0	3.01-4.0	4.01-5.0	5.01-6.0
7 point	1.0-2.2	2.21-3.4	3.41-4.6	4.61-5.8	5.81-7
Amount of points 7-21	7-9.8	9.81-12.6	12.61-15.4	15.41-18.2	18.21-21
Amount of points 5-20	5-8	8.1-11.0	11.1-14.0	14.1-17.0	17.1-20
Amount of points 5-25	5-9	9.1-13.0	13.1-17.0	17.1-21.0	21.1-25
Amount of points 5-35	7-12.6	12.61-18.2	18.21-23.8	23.81-29.4	29.41-35
Percentages	Less than 20	21-40	41-60	61-80	81-100
100 points	Less than 20	21-40	41-60	61-80	81-100
Regression, correlation	0.0-0.20	0.21-0.40	0.41-0.60	0.61-0.80	0.81-1.0

Two raters evaluated an influence of children on their parents' purchase decision using the coding system for articles that reported results of quantitative research. Results of qualitative research were also coded in 5-point scale by two raters, who subjectively judged whether wording and conclusions on reported evidence signaled very low (1) to very high (5) child's impact. Several tests were applied to measure interrater agreement. Cohen's kappa coefficient was $k=0.796$ for evaluation a general influence of child on his/her parents' purchase decision. It shows excellent agreement between raters, since values is greater than 0.75 (Banerjee et al., 1999). However, Cohen's kappa is used to measure agreement of two raters when they were using a nominal scale rating. To evaluate agreement of two raters for measurement of influence's strength we used Pearson correlation coefficient $r=0.861$ and weighted Cohen's kappa coefficient $k=0.661$. In case of both measurements we received high agreement between raters. To sum up, in 76% of cases two raters had the same evaluations of strength of child's influence on his/her parents' purchase decision.

2 Classification of articles and researches

The gathered 100 articles prove the importance of practical aspect of the topic (worth to remember that a large amount of theoretical papers were excluded from further analysis). The amount of articles differed significantly depending on a decade of publishing. We found only 11 articles published in 1985-1994. However, the amount of articles doubled during next decade (21 articles) and increased by six times between 2005 and 2014 (68 articles). We can conclude that the topic is getting its importance, since a number of articles grows constantly.

Some articles were based on several researches in different countries. Since we expected to analyze results of researches instead of articles, therefore at total sample was 116 researches. Distribution of researches according year (see Table 2) show that interest in the topic increased significantly since 2004.

Table 3 Distribution of researches according years

Year of publishing	1985-1989	1990-1994	1995-1999	2000-2004	2005-2009	2010-2014
Number of articles	8	3	11	18	39	37

The selected articles differ according research methodology. More than three quarters of researches were quantitative (76%), while 20% of researches used qualitative approach and 4% included both – qualitative and quantitative approaches (due to small number of them they were excluded from some parts of analysis). The main method for data collection was a survey, which was used in 82 researches. Since qualitative research was popular as well, 11% of researches used interviews, some researches combined interviews with focus groups or it was other combination of methods (9.5% of researches). Just 8 researches were based on observation and 2 – on experiments.

The researches differed according measurement of child's influence on their parents' decision to buy products. Most of researches used scales for measurement of influence and averages were calculated to evaluate the influence (51%). Some researchers used scales as well (11.2%), but they argued that influence could be measured only through regression or correlation. Some authors measured influence of children on their parents' decision using nominal measures and calculated just percentages (16.4%). Finally, results of qualitative researches were presented in narrative way, presenting authors attitude toward analyzed phenomena.

The sample of researches covered a wide range of countries – researches were performed in 36 countries. Based on United Nations presented classification of countries in a report "World Economic Situation and Prospects" (2014), we assigned 61% of researches to a group of researches, performed in developed economies and 39% - developing economies. Using the same source, we grouped projects according gross national income (GNI) per capita. Most of researches were performed in "high-income" countries (almost 71% of researches), while researches in "middle-income" and "low-income" category distributed quite similarly – 12.1% and 17.2% respectively.

In addition to this we classified researches according geographic regions. The same number of researches were in North America (32) and Europe (32), slightly lower amount of researches were carried in Asia (22). Almost the same amount of researches were performed in Australia and Oceania (12), Middle East (9) and Africa (8). Just one research was found in South America. Going deeper to country level we found that the most of researches were done in USA (29 researches), UK (15 researches), India (11 researches). Significant amount of researches (4-6 researches) were performed in Canada, Australia (including New Zealand), Israel, Turkey, China and Denmark. Among other countries which had 1-3 researches were such countries as Germany, Belgium, Netherland, Austria, Taiwan, Azerbaijan, Brazil, Cook Islands, Czech Republic, Egypt, Fiji, Hong

Kong, Lithuania, Malaysia, Malta, Nigeria, Pakistan, Senegal, Singapore, South Africa, Republic of Korea, Taiwan, Sweden, Thailand, Tonga and Tunisia.

3 Child's influence on their parents' decision to purchase products

The first question of systematic analysis was to find out if a child had influence on his/her parents' decision to buy products. Almost all researches reported that a child had influence (97% of researches) – just in three researches such influence was not observed. Such result is twofold. From one side we can say that child influence his/her parents' purchase decisions. However, it is quite natural that researches should report such results in order to be published. Performed researches aimed to show how influence differed depending on various demographic or psychographic characteristics of a child or parents, what was relationship between influence and usage of different strategies or other variables. Anyway, such result let us go into deeper analysis of observed influence.

Authors have used different measurements to evaluate children's' influence on parents' purchase decision. Therefore, recording of results into five-point scale (where 1 was very weak influence, 5 – very strong influence) let us to unify results from previous researches. The result proved once again that a child has influence on his/her parents' decision to purchase products, since average of influence was 2.68. However, such result showed that children have lower that average influence – it significantly differs from value 3 ($t=-3.701$, $p=0.000$), which was the scale's middle point. Such result is quite surprising, since it is common to accept the idea of a child's influence on parents' purchase decisions as general rule. However, we argue that the result is quite natural, since the scope of researches covered children of different age, researches were performed in various countries, and diverse products were included for analysis of the influence. In addition to that the influence could differ depending on year of the research as it was stated in the introduction. Correlation analysis let us answer to the question positively ($R=0.170$, $p=0.035$). We found statistically significant very weak correlation between strength of influence and year of research. So we can conclude that newer researches reported stronger influence of children on their parents purchase decision. One of reasons for growing influence could be faster socialization of children due to intensive usage of digital media.

Previous researches were performed in various countries which differ according to a number of variables. Some authors argued that children are more influential in developed economies, while other voted for poor countries. The analysis showed that children in developed economies and in developing economies have the same influence ($t=-0.854$, $p=0.395$) on their parents' decision to purchase products (see Table 4). One-way ANOVA does not prove another expectation that influence of children could differ depending on GNI per capita of a country ($F=1.492$, $p=0.229$, see Table 4).

Table 4 Difference of a child's influence on parents' decision to purchase depending on a type of country

Development of economies	N	Mean	Std. Deviation	t	Sig. (2-tailed)
Developed	71	2.62	0.976	-0.854	0.395
Developing	44	2.77	0.859		
GNI per capita	N	Mean	Std. Deviation	F	Sig. (2-tailed)
"High-income"	82	2.63	0.949	1.492	0.229
"Middle-income"	14	2.50	0.941		
"Low-income"	19	3.00	0.816		

Although we have used a trustful source for grouping the countries, they still differ on a number of factors besides economic development. Some author argue that cultural differences could have strong influence on the analyzed topic. Some countries were more attractive for researches and they had more than three researches. We analyzed data with parametric tests and nonparametric tests due to small amount of cases. However, in both measurements we did not find significant difference in a child influence on their parents' decision to buy products depending on a country of research ($F=0.786$, $p=0.617$; $H=7.055$; $p=0.5307$, see Table 5). Nevertheless, we can get some ideas. We can see that in some countries (China, Israel, India, UK) mean of child's influence was equal or almost equal to 3 (average influence), while in other countries (USA, Denmark, Turkey) mean was close to 2 (weak influence).

Table 5 Difference in reported child influence on parent's purchase decision depending on a country

	N	Mean	Std. Deviation	Test	Sig. (2-tailed)
China	4	3.00	0.000	ANOVA F 0.786 Kruskal Wallis H 7.055	0.617
Israel	5	3.00	0.707		
India	10	2.90	0.876		
UK	15	2.80	0.941		
Australia-New Zealand	5	2.60	1.140		
Canada	6	2.67	0.816		0.5307
USA	29	2.38	0.979		
Denmark	4	2.25	0.957		
Turkey	4	2.25	0.957		

We have to notice that performed researches differed in their methodology and year of research. Therefore, it is not possible to draw a strong conclusion about the lack of differences among various countries. A diversity of researches let us to evaluate how evidence of a child's influence on his/her parents differs depending on a used methodology. Strong difference was observed in case of quantitative and qualitative research ($t=-3.324$, $p=0.001$ total amount of researches is not equal to 116, since mixed researches are not included in the analysis). Children had stronger influence on their parents purchase decisions in case of qualitative researches ($Mq=3.26$) comparing with quantitative ($Mqt=2.57$). The same result was found when researches were distributed according to methodology. Strength of child's influence was higher in case of subjective evaluation ($Ms=3.00$) than regression (correlation) ($Mr=2.08$), or percentages ($M\%=2.37$), but had no statistically significant difference from means ($Mm=2.76$) (see Table 6).

Table 6 Difference depending on a research methodology

Type of data	N	Mean	Std. Deviation	Test	Sig. (2-tailed)
Quantitative	87	2.57	0.88439	T test -3.324	0.001
Qualitative	23	3.26	0.86431		
Mean	59	2.76	0.77324	Anova F 3.732	0.013
%	19	2.37	0.95513		
Subjective	25	3.00	1.11803		
Regression	12	2.08	0.90034		

Such differences are quite natural. Qualitative researches are more subjective and some interpretations of results are made in close relationship of the researcher with analyzed problem. It is very difficult to stay quite objective in qualitative researches. At the same time qualitative research presents deeper understanding of a problem. However, rare qualitative research stressed exactly on child's influence. Rather often child's influence was as one of number variables analyzed in these researches. Another fact can support the idea of a lack of objectivity in qualitative researches. We found statistically significant correlation ($R=-0.221$, $p=0.009$) between a number of respondents in a research and strength of child's influence. That proves an idea that qualitative researches lack an objectivity and presents subjective attitude of a researcher. Increasing number did not increase representability of results, but it decreases sampling error.

Based on analysis of 116 researches and using different statistical test we proved that child's influence on his/her parents' decision to purchase products differ depending on year of research, number of respondents, type of research. Using regression analysis, we decided to evaluate which factors have the strongest influence. In addition to mentioned factors we added GNI per capita in a country. Performed analysis showed that two variables – year of publishing and income level had no impact on evaluation of child's influence on parents' purchase decisions. Type of research and number of respondents had strongest impact on evaluation of child's

influence (ANOVA $F=4.557$, $p=0.005$, $R^2=0.110$, in both cases stand. coef. $\beta=-0.195$). As it was mentioned previously, a number of respondents had negative impact on evaluation of child's influence of parents' purchase decisions ($t=-2.149$, $p=0.034$). In relation with this we can notice that a type of research has the same effect. In case of quantitative research, we could expect to have lower child's influence on his/her parents' purchase decision ($t=-2.128$, $p=0.036$).

Conclusion

Almost all observed in this analysis previous studies reported that child influence exist. More recent studies reported a stronger influence of the child on their parents purchase decision. Evaluating this influence researches covered children of different age, research was performed in different countries, and various products were included in studies. Authors used different research designs and methods, as well as different instruments and scales to evaluate children's influence. Thus, previous studies, used in this analysis, suggest that children influence parents' purchase decision. Although many researchers accept the idea of a child's influence on parents' purchase decisions as a general rule, this analysis suggest that children have lower that average influence.

Data in previous research were collected in various countries which differ according to a number of variables. Some authors argued, that children are more influential in developed economies, while others suggested that in developing countries. This systematic analysis showed that children in developed economies and in developing economies have the same influence on their parents' decision to purchase products. Analysis does not prove that influence of children could differ depending on country's GNI per capita. Authors argue that besides country's economic status, cultural differences could have a strong influence on the analyzed object. In this analysis we did not find significant difference in a child influence on their parents' decision to buy products depending on a country, thus it is not possible to conclude that a country *per se* or even a culture have an effect on child's influence.

Speaking about what factors could have shaped the reported evidence of children influence on parents purchase decisions, the results in this analysis suggest that a type of research (qualitative or quantitative) and number of respondents had the strongest relationship with reported evidence of child's influence. Qualitative researches tend to report higher impact of children on parents purchase decisions. A number of respondents had a negative impact on evaluation of child's influence of parents' decision: the more respondents were involved; the less children influence was reported. Having in mind that higher number of respondents leads to lower sampling error, the results of plentiful researches (that signal lower impact of a child) should be more objective. Also, the evidence shows increasing impact of children on family in purchase contexts over time. That can be explained through increasing reverse socialization, when children knowledge, opinions, desires, access to information, collected through media, peers, or other third parties is reflected on parents more evidently in recent decades.

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*BUILDING TRUST IN LUXURY GOODS IN SOCIAL MEDIA:
CASE OF THE POLISH BOATING INDUSTRY*

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Abstract

Purpose of the paper Recently manufacturers of luxury goods have started using networking portals as an opportunity not only to promote their products but above all to build trust in the brand. The objective of the paper is to identify ways to build trust in luxury goods in social media. For the purpose of the paper, literature studies and empirical research were conducted allowing exemplification of trust-building activities. The study covered three Polish strongest brands of yachts, undoubtedly included in the luxury goods sector with recognized world reputation.

Methodology The use of a new research method, which is netnography, allowed analysing the content posted by the monitored companies to social media. On this basis a comparative analysis of the activities of these companies in social networks was performed.

The scientific aim is to explore whether the manufacturers of luxury goods, including yachts, are active in social media, and if yes, with what frequency and what content they post, and what reactions their activity in that respect evokes among consumers.

The findings confirm that the luxury brands entered the social media by taking trust-building activities targeted at their customers and at the same time preserving their exclusive specificity. The activity of the companies examined in social media is focused on two major platforms: Facebook and YouTube. The frequency of publishing materials is relatively low and their content emphasizes the prestige of the brands and their unique character. The reactions of recipients of the published content are positive in the main, and arouse admiration and recognition among Internet users all over the world.

Conclusions The present work deals only with some issues of this extensive interest area. A lot of important issues need further investigation. The elusiveness of the concept of trust implies difficulties in measuring the level of trust among users of social media. This is therefore a major challenge for scientists dealing with this problem.

Keywords: trust, social media, luxury goods, boating industry

JEL Classification: L69, M31

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Introduction

Relationships in social media – as a reflection of real life – are based on trust. We do not realize it until somebody abuses our trust. Then we can feel unsatisfied, disappointed, cheated, or even betrayed. It concerns both private and business lives. There is no doubt that trust is the most widespread and everyday phenomenon in social life (Sztompka, 2007). It enables us to fulfil our needs better or to increase their number. Trust is the foundation of trade exchange. While purchasing products and services delivered by other people, we actually express our trust in them. Without trust the fulfilment of the humans needs requiring cooperation would be impossible. Furthermore, within cluttered markets we need trusted brands giving us confidence and security to make decisions with the belief that it will be most satisfactory. Therefore, consumers search internet actively to confirm that the brand the purchase of which they are considering is trustworthy. Knowing it, marketers everlastingly should be concentrated on building and sustaining consumers' trust.

The objective of the article is to identify ways to build trust in luxury goods, such as yachts, in social media. For the purposes of the paper, literature studies and empirical research were conducted allowing exemplification of trust-building activities. The study covered three strongest Polish brand yachts, undoubtedly included in the luxury goods sector with recognized world reputation. The qualitative and quantitative analyses of the activities of these enterprises in social media focused on two major platforms: Facebook and YouTube. The basis for the selection of these channels was the fact that all leaders in the industry use them and they are the most popular social networking sites (Sotrender, 2013; DMR, 2016).

The paper attempts to fill the existing gap in research on the presence of luxury brands in social media. Such presence does not focus on encouraging customers to make purchase decisions or on gaining lots of fans, but on creating the image of a trustworthy manufacturer. In the case of luxury goods, this image should be unique. In subject literature one can find an increasing number of works devoted to social media. They mainly deal with the impact on the buying behavior of consumers and consumer-brand relationship (Nadeem et al, 2015; Kumar et al, 2016; Hudson et al, 2016) but also with social relations (Jin, 2015; Fieseler and Fleck, 2013). Only a few works deal with the presence of luxury brands or luxury goods in social media (Wu et al., 2015; Parrott, Danbury and Kanthavanich, 2015; Chu et al, 2013). This work focuses on the study of behaviors which aim to build trust among stakeholders of companies being manufacturers of luxury goods. There is no consensus as to whether luxury goods should be promoted in social media because of their mass character (Jahn et al, 2012; Phan, 2011). By definition, however, luxury goods are targeted only to a limited number of recipients who are ready to pay an exorbitant price for meeting their specific psychological and social needs (Vigneron and Johnson, 2004).

Therefore, this work attempts to provide answers to the following research questions:

- Do the companies manufacturing luxury goods use social media to build trust among stakeholders?
- What is the frequency of posting new content to social media?
- What is the nature of the material published by the companies in social media?
- To what extent do the companies use the possibilities offered by a given communication channel?
- What is the response of social media users to the activities undertaken by the companies?

The major research method applied in the work stems from the netnography method (virtual netnography) (Kozinets, 2010). Due to the fact that netnography is a relatively new method and there are still no formalized procedures for collecting and analysing data, we followed the steps below:

- analysis of the researched companies' websites and their presence in social media,
- assessment of the degree of integration of the Internet websites with the content displayed in social media,
- analysis of the websites on Facebook and YouTube.

The observations performed (excluding the January-February 2016 period) allowed gatherin interesting data without exerting any influence on the examined behaviors. To ensure the reliability and comparability of the results of the examination of the selected businesses, a standardized research tool was used. It included the elements that are necessary to obtain answers to the above-mentioned questions.

1 Trust in luxury goods – selected theoretical aspects

In economics there is no single universally acceptable definition of luxury goods. The concept of luxury is in fact a subjective category and variable in time. The subject literature (Vigneron and Johnson, 2004; Bochańczyk-Kupka, 2014) emphasizes that the assessment of whether the product is a luxury good is determined by various factors. On the one hand, it is conditioned by the socio-economic development of the country, on the other hand,

by individual needs of the consumer, the level of his disposable income, as well as by personal and interpersonal motives of his behaviour.

It is frequently attempted to define luxury goods by means of their peculiar and distinguishing characteristics. These include the premium quality, a very high price, rarity, uniqueness, aesthetics, design, and the brand story. It is also often indicated that a particular good, in fact, is not necessary for human existence, but it does provide extra pleasure (Kapferer, 1997).

In the case of luxury goods psychological motives impact largely purchasing decisions. These types of goods are widely regarded as the hallmark of wealth, since they are characterized by a very high quality and uniqueness. These are the products drawing attention and often causing admiration (Dryl, 2012). In this context it is worth mentioning the so-called 'conceptual model of consumer value' existing in economic literature and represented by luxury goods. The creators of this model (Wiedmann, Hennings and Siebers, 2007) identified four value categories functioning within the concept of a luxury good. These are financial, functional, individual, and societal values. The first value is represented by the price, the functional value concerns the usefulness and quality of the good. The individual value includes the so-called hedonist values and the value resulting from one's sense of identity, and even uniqueness. The social value, in turn, represents prestige, sometimes the demonstration effect, and conspicuous consumption.

One of the most important elements of the structure of a luxury product, distinguishing it from other goods, is a strong brand. Luxury brands typically have a distinguished and frequently extraordinary history that creates a mystical aura around them and makes them an object of desire.

Generally, 'to say we trust you means we believe you have the right intentions toward us and that you are competent to do what we trust to do' (Hardin, 2006). It is quite similar in the case of brand trust. 'Brand trust is the willingness of the average consumer to rely on the ability of the brand to perform its stated function' (Chaudhuri and Holbrook, 2001). As a rule, for the brand to bring the company all the potential benefits, it must inspire trust. Research on luxury brands shows that brand trust significantly increases brand loyalty and decreases brand risk (Song, Hur and Kim, 2012). At the same time we know that a significant part of customers is ready to pay more for a trusted brand, and even 25 percent of customers state that price does not matter, if they are buying a brand that owns their loyalty (Davis, 2002).

However, if customers perceive that a company's efforts are limited to creating a marketing image only, then such a brand does not necessarily become a trustworthy one. Denise Lee Yohn in her book 'What great brands do: the seven brand-building principles that separate the best from the rest' at the head lists that great brands start inside (Yohn, 2014). It is very important because organisational culture can act as a 'glue' uniting staff in disparate locations to act in a similar manner. It can motivate staff and through coherence of employees' behaviour it can help engender a feeling of consistency about a brand. A strong organisational culture can increase the level of trust stakeholders have in a brand and thereby enhance performance levels. Implementing organizational culture consistent with the values of the brand guarantees the fulfilment of the promise (De Chernatony, 2010). These are being honest and keeping promises that are crucial in building trust. Real trust assumes sincerity. It cannot be pretend, if so, then it is not trust.

The growing popularity of social media facilitates free flow of information. As a result, consumers around the world can easier than ever before express and validate their opinions. Consequently, they learn quite quickly if behind the advertised brand there is falsity, abuse, mistreatment of workers, or even violation of human rights. Consumers act in accordance with the principle of trust coherence that says that it is functional to entrust reliable persons and not to trust the untrustworthy (Sztompka, 2007). Consumers, therefore, use social media with a view to verifying information stemming from advertising, looking for confirmation that a specific brand is trustworthy. From the consumer point of view, it seems to be a very convenient tool for confirming the expected quality level and customer satisfaction. However, there is still some risk. Research results show slight trust shown to 'the company's social networking site' as a trusted information source (18%). Much more consumers' trust gain 'friends' social networking sites' (43%) (Bernoff, 2008).

'Trust is only bestowed where there is an uncertain or risky situation. In this case, the trustor, by trusting the counterpart, voluntarily puts himself in a vulnerable situation' (Castaldo et al., 2010, 663). Therefore, the brand trust is especially important in the situation of high-priced brands which are generally perceived as a risky purchase, due to their complexity or brands that reflect the buyer's self-image. The last one is exemplified by luxury products, such as yachts.

2 The boating industry in Poland

Poland cannot boast of so many luxury brands as, for example, France or Italy. In the last twenty years, however, there has been a significant change in this area. Some Polish luxury brands, especially fashion ones

(e.g., La Mania), have gained recognition not only in the country but also abroad. Some Polish designers such as, for instance, Eva Minge, Paprocki&Brzozowski, or Gosia Baczyńska, whose clothes are sold in exclusive boutiques worldwide, can boast of increasing name recognition outside the country (KPMG, 2015).

An example of a spectacular success that Poland has achieved in the global luxury goods market is the boating industry. At present Poland is the European leader in the production of luxury yachts in the most popular segment of the 6-9m length; in the world Poland ranks second after the United States.

According to the data of the Polish Chamber of Marine Industry and Water Sports, the national boating industry comprises approximately 900 private companies employing about 35 thousand people. Only a dozen of them are actually shipyards and the rest of the companies supply the industry leaders (for instance, producers of yacht rigging). The annual production capacity of the sector reaches the level of 22 thousand vessels. In Poland, the market for this type of goods is very small, therefore, 95% of the production of the yachting industry is exported mainly to Western Europe, Scandinavia, the Mediterranean countries, the United States, and to Russia.

Three Polish shipyards - Galeon, Sunreef and Delphia Yachts are significant players in the global market for yachts. At the same time these are the most recognized luxury brands in the industry (KPMG, 2015). A showcase of the Polish boating industry are large luxury motor yachts Galeon - up to 24 meters in length, large catamarans, and mega yachts produced by the Sunreef Yachts company (up to 30 meters in length) and large sailing yachts supplied by Delphia Yachts (up to 15 meters). The specialty of the Polish industry, however, are smaller motor yachts with a length of 6-9 meters. This segment is the most popular one in the world due to the price and relative ease of transport (The Polish Chamber of Marine Industry and Water Sports, 2015).

The long-term experience of manufacturers and the quality both in terms of technology and designs have primarily contributed to the success of the Polish boating industry (The Polish Chamber of Marine Industry and Water Sports, 2015). It is worth noting that Polish yachts manufacturers less and less frequently compete in the world by offering lower prices, astoundingly, they are often even more expensive. A key element of their competitiveness is the quality of manufacture, nautical properties, modern design, and the internationally recognized brand.

3 Building trust in social media – case of Polish brands of yachts

The conducted analysis of the activities of brands under scrutiny in social media platforms embraced YouTube and Facebook. The content of these two channels of network communication are integrated and consistent with the websites of the companies. Although they are not the key marketing channels for the companies, they certainly function as a place to build trust in the brand.

3.1 Polish luxury yachts on YouTube

YouTube is a web portal which allows free uploading and viewing videos. It offers a service of viewing video content on-demand, so users themselves decide what to watch and when. They can also rate and comment on the displayed material.

All of Poland's biggest manufacturers of luxury yachts are present on YouTube site (Table 1). There you can find videos uploaded by yacht manufacturing companies as well as private files uploaded by yacht owners, enthusiasts and brand ambassadors, as well as by people who show interest in this field. Most videos relate to the Sunreef brand (8,080), slightly less material concerns the Galeon (5,300) and Delphia (4,200) brands (see Table 1). Most uploaded videos show already completed projects, i.e., luxury vessels produced in yacht shipyards. The site also displays video content related to trade fairs, conventions, and sporting events with the participation of yachts produced by Polish manufacturers.

All of the analysed companies are making efforts to promote themselves and distribute new original content through YouTube, therefore, new videos on the official channels of these companies are relatively rare. This should be no surprise, since the yacht industry is specific. Implementation of a specific project, from the stage of ordering to the stage of delivering a luxury yacht can take up to several years. This is the time needed for a luxury product to meet all, even the most unusual and sophisticated needs and expectations of the buyer. Infrequent uploading of material on official corporate channels is also related to the fact that the products offered are luxury goods, and the luxury products market is governed by specific laws, often referred to as paradoxical.

These goods are rare, exclusive, and prestigious and demand for them does not increase along with the decrease in prices; they are purchased due to arising wants, not needs, with a view to achieving a higher social status of the buyer. Based on the conclusions drawn from the analysis of the subject literature and experiences of luxury goods manufacturers, the major assumptions of marketing strategies for luxury goods that need to be highlighted within the area of communication include limited promotional activity and non-mass advertising

(Chevalier, Mazzalovo 2008). The activity of the considered companies on the YouTube site is not very frequent and, therefore, in a sense, even videos are becoming scarce, unique and awaited by subscribers.

Table 1 The presence of luxury brands representing the Polish boating industry on YouTube

Specification	Galeon	Sunreef Yachts	Delphia Yachts
The number of videos found on the site after entering the brand name with the word 'yachts'	5300	8080	4200
The name of the official channel used by the manufacturer	GaleonYachts	BigLuxCat	Delphia YachtsTV
The total of videos published on the official channel and the information on the previous year	24 4	41 7	49 5
The total number of views of videos uploaded on the official channel	135693	865456	135367
Number of subscriptions	233	1336	193
Number of user opinions given in the form of 'I like' and I dislike it'	205	1340	108
The share of positive feedback, <i>i.e.</i> , 'I like it'	97%	91%	94%

Source: elaborated by the authors based on YouTube videos (dated 12 February 2016)

Interesting information is provided by the analysis of 'likes' and comments posted by users who have watched videos uploaded on YouTube. 'Likes' on a channel are the sign of recognition for a product, brand or manufacturer. They bear the marks of trust because they are voluntary and result from the inner desire to share your opinion with other internet users.

Due to the large amount of material available on YouTube (the total of over 17 thousand videos), while analysing 'likes' and comments, only videos published on the official channels of all three manufacturers of luxury yachts were taken into account. It turned out that for all manufacturers of yachts over 90% of opinions (opinions equal here 'I like it' or 'I dislike it') are positive, *i.e.*, 'I like it'. As regards comments, though in general there were very few of them, almost all had a positive connotation. Only few of them were negative, which proves a quest for the truth, a confrontation with reality and the desire to improve. This undoubtedly affects brand trust (Covey and Merrill, 2009). It also shows that companies do not run away from responsibility.

3.2 Polish luxury yachts on Facebook

Founded in 2004, Facebook's official mission is to give people the power to share and make the world more open and connected. People use Facebook to stay connected with friends and family, to discover what's going on in the world, and to share and express what matters to them. According to a research agency DMR (2016), nowadays as many as 1.591 billion people use Facebook. A company that intends to take advantage of this powerful network of contacts creates a brand profile, the so-called 'fanpage', and seeks to establish and maintain contacts with customers or potential customers. The presence on Facebook gives companies a variety of opportunities to engage users, build brand awareness, loyalty, and trust.

The specificity of luxury goods is that they are directed to the few; therefore, the luxury good fanpage is not intended to gain a maximum possible number of fans, as it is in the case of brands targeted at a mass audience. But the argument for their activity in social media is the data showing that smaller communities have a greater impact on shaping opinions and enjoy more trust than the big ones (Technorati, 2013). Therefore, the presence of luxury brands on Facebook has been justified and has become a marketing necessity. It is not without reason that the saying 'if you do not have Facebook, it means that you do not exist' has become common.

All three leaders of the Polish boating industry have their fanpage on Facebook with the names identical to the names of their brands. Their elite character is proved not by a very high number of fans (shown in Table 2). The Sunreef Yachts brand can boast of the largest number of likes (11,667), however, this is the only fanpage among the respondents that does not allow placing reviews, or reading other users' opinions. It needs to be emphasized here that listening to customers and responding to their comments is an important function of social media and allows strengthening and building relationships. In addition, one of the basic principles of building trust is transparency (Bennis, Goleman and O'Toole, 2009), therefore, the lack of it may lead to raising suspicions. If we want others to trust us, we should not only speak the truth, but also to show people how they can verify whether something is true or not (Covey and Merrill, 2009). Trust is built through the openness of authenticity and transparency. Galeon and Delphia Yachts use for this purpose the possibilities of social networks and publish reviews and opinions of Internet users.

Table 2 The presence of luxury brands representing the Polish boating industry on Facebook

Specification	Galeon	Sunreef Yachts	Delphia Yachts
Total Page Likes	4,193	11,667	9,371
Total of 'People talking about this'	73	220	80
Total of 'People checked in here'	94	–	9
Total of 'New Page Likes'	44	37	21
Total of posts published in the previous month	8	23	14
Total of reviews	136	–	26
Average grade (review)	4.7 per 5 stars	–	4.6 per 5 stars

Source: the authors' own study based on the materials posted on Facebook (dated 12 February 2016)

The information published by companies on the fanpage are in English, in addition, Delphia Yachts publishes posts also in Polish. The created content relates primarily to events in which the brands participated. All of the tested yacht brands share their stories, emphasizing the long term of their presence in the market and achieved successes in the international arena.

Particularly noteworthy is the fact of liking by one of the companies (Galleon) another company's fanpage (Delphia Yachts). One can consider this as an expression of confidence, worthy of luxury brands, but also as a positive attitude towards the competition and showing it respect. Through such behaviours brands communicate their values, with which target consumers can identify. This causes certain emotions as well as impacts trust. (Horsager, 2012).

The companies place images and videos on each of the analyzed fanpages. However, only Delphia Yachts displays images posted by other users. These are often private photographs presenting users in personal situations with a Delphia Yachts yacht in the background. This proves establishing an extremely valuable dialogue through social media. This is also a particular expression of trust shown by sharing positive experiences and emotions related to the brand with the company and other fans.

A very interesting example of building trust in luxury brands is uploading a Sunreef Yachts video from Paris Fashion Week 2014 informing that 'the company had a great pleasure to accompany an outstanding Polish fashion designer Gosia Baczyńska during her fashion show in Paris'. The company underlines its exclusiveness by appearing in the company of other luxury brands such as Dior, Chanel, and Lanvin. It communicates in this way its unique character and allows its fans learning about it from another side – more personified one. It stands out in this way and reinforces the brand equity by matching the emotional values and positioning.

A specific feature of the actions conducted by luxury brands, which can be observed on other Facebook profiles, is the lack of calls to like, comment and share content published by visitors of the fanpage. This demonstrates a serious, unobtrusive approach to clients, as opposed to efforts made to strengthen brands in the FMCG sector.

Conclusion

Today, luxury brands are increasingly active in social media. Manufacturers of luxury goods have begun to treat their web presence as an opportunity not only to promote their products, but also as a way to build trust in the brand. Broadly understood social media allow for effective communication and focus around a product, brand, events, ideas, or views.

This article focused on the analysis of ways to build trust in luxury brands in social media. We examined the three leaders of the Polish boating industry, whose products are among the most luxurious brands in the world. The issues considered were the measures taken in two extremely popular social networking sites such as YouTube and Facebook. The published materials relate to different aspects of the activity of the manufacturers of luxury yachts. Most of them is a presentation of the companies' achievements, provides information about the completed projects and initiatives, received awards and honors, thus promoting the realization of the marketing objectives of the companies. The social media build positive emotions and trust in the brand.

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*DETERMINATION OF FACTORS AFFECTING CONSUMER IN-STORE
BEHAVIOUR: THEORETICAL INSIGHTS*

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Abstract

Purpose of the article Considering the growing competition in retail sector, the creation of convenient store environment becomes as much important as providing a relevant assortment of goods or setting correct prices. This study aims at finding the factors that affect consumer in-store behaviour.

Methodology/methods Analysis and synthesis of scientific literature, and logical analysis were provided to substantiate the components of the theoretical model.

Scientific aim is to elaborate the conceptual model for the determination of consumer in-store behaviour.

Findings The scientific analysis revealed the significance of store atmosphere as a driver of consumer in-store behaviour. The researches provided by various authors substantiate the existence of three to five store atmospherics which are important determinants of consumer in-store behaviour, namely: external variables; interior variables; layout and design variables; point-of-purchase and decoration variables; and human variables. According to neobehaviouristic approach, all these variables determine consumer cognitive and affective reactions which result in conative behaviour. The conative reaction can be classified into approach or avoidance behaviour; moreover, the approach behaviour can take a long-term perspective, resulting in customer loyalty.

Conclusions Specific elements of store atmosphere can be observed or missing regarding particular stores. Nevertheless, the elaborated conceptual model becomes the base for the general consumer in-store behaviour empirical researches, allowing not only broadening marketing theories of consumer behaviour, but applying the results of empirical researches in practice as well, which would enhance the possibility of improved customer loyalty.

Keywords: atmospherics, customers, in-store environment.

JEL Classification: M31, M37

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Introduction

The intensifying speed of life has created the situation that shopping becomes a consumers' task which has to be performed fast and smoothly. Contemporary consumers are not interested in the complexity of today's marketing landscape, and when they want or need to buy, they will do it by whatever means are available and convenient (Hathaway, 2014). According to Bohl (2014), pleasant ambience and appropriate design of shopping environments have been shown to cause approach behaviour. Park, Iyer and Smith (1989) found that many types of in-store shopping decisions are being affected by consumers' store knowledge and the time available for shopping. Hathaway (2014) argues that contemporary consumers do not care whether something is retail or shopper marketing, digital or promotional, social or advertising; they simply want the best possible retail experience. This causes storeowners to reinvent shopping environment to be consumer-friendly, convenient, and informative as well as entertaining in terms of experiences provided.

Achieving to contribute to scientific discussion considering the shopping environment, the problem solved by this research is: what are the factors affecting consumer in-store behaviour? and what are possible reactions to in-store stimuli?

The aim of the research is to elaborate the conceptual model for the determination of consumer in-store behaviour. Achieving to solve the scientific problem and to reach the aim of the article, following tasks were set to frame the logical structure of the research:

- To determine the environmental factors that affect consumer in-store behaviour;
- To find out possible consumer reactions to in-store stimuli;
- To elaborate the conceptual model of consumer in-store behaviour.

In order to reach the aim of the research, the paper is structured around the sequence of the tasks set. The analysis of scientific literature regarding consumer in-store behaviour, its determinants and consequences is analysed to form a conceptual model for the determination of consumer in-store behaviour.

1 Determinants of consumer in-store behavior

There is a wide body of academic research concerning the factors affecting consumer in-store behaviour. According to Hui, Bradlow and Fader (2009), studying consumers' in-store behaviour is an important topic for academic researchers and industry practitioners alike. Rödiger and Hamm (2015) emphasise that in consumer behaviour literature, behaviouristic and neobehaviouristic approaches can be found to explain consumer behaviour. The core difference between those approaches is that neobehaviouristic approach acknowledges the influence of consumer-related (social, personal, psychological) characteristics on the response to a stimulus. Moreover, Vieira and Torres (2014) cite Environmental Theory which proposes that environmental factors affect consumer arousal, which subsequently affects pleasure and consumer shopping behaviours (e.g. buying intention).

Groepel-Klein (2005) emphasises that the empirical investigation of consumers' responses to store atmosphere and visual merchandising concepts has been an interesting research area and it has now become widely accepted that an appealing store atmosphere has a major impact on consumers' in-store behaviour and store assessment. Store atmospherics are a subset of the more general research stream on the physical environment in service businesses (Chebat and Michon, 2003) and describe the special sensory qualities of retail spaces that are often designed to evoke particular consumer responses (Summers and Hebert, 2001); whereas visual merchandising is the presentation of a store and its merchandise in ways that will attract the attention of potential customers and motivate them to make purchases (Diamond and Diamond, 2007). Kleinová et al (2015) emphasises that visual merchandising engages all the senses. Gudonavičienė and Alijošienė (2015) suggest that by using various combinations of visual merchandising elements, retailers aim at creating an attractive sales environment that affects emotions and behaviour of buyers at the store. However, even a perfectly elaborated strategy of visual merchandising is not enough to encourage customers to buy; we consider visual merchandising as a part of store atmospherics (the visual one) used to stimulate consumers' purchase decisions.

Many scholars (e.g., Sharma and Stafford, 2000; Muhammad, Musa and Ali, 2014; etc.) accept Baker's (1986) proposition that store atmospherics are composed of ambience, design, and social factors. Supporting the neobehaviouristic approach, Turley and Milliman (2000) have classified the store atmospheric variables into five groups: (1) External variables; (2) General interior variables; (3) Layout and design variables; (4) Point-of-purchase and decoration variables; and (5) Human variables (Table 1).

Various atmospheric elements, taken one at a time, affect consumer responses (Muhammad, Musa and Ali, 2014). Moreover, the research provided by Joseph-Mathews, Bonn and Snepenger (2009) showed that different environmental elements result in different behavioural intentions.

Table 1 Atmosphere-related determinants of consumer in-store behaviour

Store atmospherics	Atmospheric variables	Elements in the atmosphere
Ambience	External variables	Store front
		Entrances
		Display windows
		Building architecture
		Parking
		Surrounding area
	General interior variables	Flouring / Carpeting
		Color schemes
		Lightning
		Scents
		Sounds
		Temperature
		Cleanliness
		Wide of aisles
Design	Layout and design variables	Wall coverings
		Merchandise
		Space design and allocation
		Traffic flows
		Placement and grouping of merchandise
		Furniture
	Waiting and dead areas	
	Point-of-purchase and decoration variables	Point-of-purchase displays
		Signs and cards
		Pictures and artwork
Product displays		
Social factors	Human variables	Usage instructions
		Price displays
		Employee characteristics
		Employee uniforms
		Crowding
		Customer characteristics

Source: adapted from Baker (1986) and Turley and Milliman (2000)

External factors

Store exteriors are consumers' first encounter with a retailer when shopping (Lange, Rosengren and Blom, 2016) and thus are an important opportunity for stores to build positive impressions (Mower, Kim and Childs, 2012). Despite this, the research pertaining to this portion of a store's atmosphere is extremely limited and deserves more attention because the exterior is the first set of cues normally seen by a customer (Turley and Milliman, 2000).

Mower, Kim and Childs (2012) suggest that landscaping and window displays can be considered as the key elements of store exteriors because of their high visibility and key role in attracting customers into a store and ease of control for retailers to improve their exteriors. Analysing the store-window impact on consumer behaviour, Lange, Rosengren and Blom (2016) suggest that the ability to attract visitors to a store depends on two characteristics of store windows: their presence and size. Joseph-Mathews, Bonn and Snepenger (2009) emphasise that impressive architectural exteriors can enhance the number of store visitors, as they often encapsulate many of the very characteristics the attraction has to offer.

Turley and Milliman (2000) emphasise that if external environment of the store is undermanaged, the rest of the atmosphere may not matter.

General interior

A retail store is a multi-sensory environment filled with messages to tempt customers into making unplanned purchases (Otterbring, Wästlund and Gustafsson, 2016). According to neobehaviouristic approach supporting “stimulus-organism-response” sequence, such environmental elements as lighting, colour, material, and art compositions (or décor) are crucial elements attracting products’ target groups and stimulating their purchasing decisions in physical service environments (Kernsom and Sahachaisaeree, 2012; Wardono, Hibino and Koyama, 2012).

According to Bohl (2014), a pleasant ambient lighting in a store makes it appear friendly, welcoming, which attracts customers to the store or makes them stay longer than intended. Using the direction of a light source and changing its intensity can also alter the perceptual mood of a space (Kernsom and Sahachaisaeree, 2012). Summers and Hebert (2001) suggest that a more appealing store with better-illuminated merchandise may entice shoppers to visit the store, linger, and even make a purchase. Moreover, Wardono, Hibino and Koyama (2012) emphasise that the lighting plays most important role in creating intimate spaces.

Babin, Hardesty and Suter (2003) emphasise store colour is important in understanding consumer in-store behaviour; moreover, the authors suggest colour to be combined to the ambient lighting to reach the desired sales effect. Kernsom and Sahachaisaeree (2012) emphasise that colour does not only create an impact towards customers’ perception but also influence their moods and attitudes.

The research provided by Chebat and Morrin (2007) indicated that mall décor schemes can have significant effects on shoppers’ perceptions not only of their environment but also of the quality of products sold in the environment.

Hynes and Manson (2016) emphasise that music is often used in the service environment in order to guide consumer behaviour to purchase, or improve consumer mood; however, the impact of other noises within a servicescape on consumer is ignored in scientific literature. The findings of the research provided by Morrison et al (2011) indicated that having the right mix of music and aroma is an important contributor to pleasure levels and consequently to key outcome variables such as spend and satisfaction with the store.

Layout and design

Kernsom and Sahachaisaeree (2012) suggest that store composition should be taken into consideration as the arrangement of lines, forms, shapes, and colours into a pleasing whole to attract the viewer’s eyes and relay a particular message. The study provided by Joseph-Mathews, Bonn and Snepenger (2009, p. 203) revealed that design and layout elements have the strongest impact consumers’ attitudes to the facility. According to the authors, “*this makes intuitive sense as functional issues such as aisle space, traffic flow, layout and spaciousness are critical to how a patron will feel about a specific facility*”. Moreover, Kreidler and Joseph-Mathews (2009) state that the right in-store design maintains consistency with the specific created store / brand personality.

Point-of-purchase and decorations

Phillips et al (2015) emphasise that achieving to attract shoppers supermarkets use a range of typical activities of in-store promotions: store coupons, manufacturer coupons, product demonstrations, and end-of-aisle (or end-cap) displays. Point-of-purchase and decoration variables aim more at guiding shoppers within the store and tend to concentrate on displaying what items shoppers should select (Turley and Milliman, 2000). Which messages capture the attention of a consumer is determined by many factors, such as the relevance of the message and the consumer’s motivation (Jansson, Bointon and Marlow, 2002).

One of the ways to make shopping easier and more entertaining is Point-of-Purchase in-store Advertising (POPA). Also, this marketing measure can become beneficial to the company. According to Jansson, Bointon and Marlow (2002), in cluttered markets, point-of-purchase materials have been reported to be good techniques to gain consumers’ attention. Collart, Palma and Carpio (2013) suggest that an examination of consumer response to POPA can help brand managers adjust marketing channels and rationalize further investments.

Human factors

According to Joseph-Mathews, Bonn and Snepenger (2009), social factors are most relevant to revisit intentions: both staff and other customers can impact whether a consumer would be willing to revisit a facility.

The other group of human factors affecting in-store behaviour is personal factors. Chebat, Gélinas-Chebat and Therrien (2005) emphasise that the nonmonetary shopping costs are perceived as high, and sometimes too high, by an increasing number of shoppers. E.g., based on the analysis of scientific literature, Otterbring, Wästlund and Gustafsson (2016) suggest that customers with limited knowledge of the store’s layout would be more likely to direct their attention towards in-store cues than customers who are familiar with the store.

2 Consumer reactions to in-store stimuli

According to Babin, Hardesty and Suter (2003), elements in store atmosphere or store cues cause specific cognitive and affective reactions, and these reactions modify shopping behaviour – lead to conative or behavioural responses. Chebat and Morrin (2007) suggest that atmospherics operate primarily via cognitive rather than affective routes. Moreover, analysing the construct of shopping value, Babin, Darden and Griffin (1994) emphasise its two-dimensionality: (1) a utilitarian outcome resulting from some type of conscious pursuit of an intended consequence, and (2) an outcome related more to spontaneous hedonic responses.

As behavioural outcomes, sales, time in the environment, and approach-avoidance behaviour (according to Kumar and Kim (2014), “*approach is the desire to remain in the store, continue to shop, and stay for relatively long periods; in contrast, avoidance behaviour is associated with negative reactions including a desire to leave the store and not return*”) have been the most widely examined dependent variables in experimental studies of the retail atmosphere (Turley and Milliman, 2000). E.g., the research provided by Mower, Kim and Childs (2012) showed that those customers who liked the exterior retail environment, exhibited higher patronage intentions.

However, the research provided by Muhammad, Musa and Ali (2014), considers a long-term behavioural outcome – customer loyalty – mediated by a store atmosphere-induced customer hedonic experience. According to Mower, Kim and Childs (2012), if customers enjoy their experience, they are more likely to have favourable associations to the retailer, make purchases, and become loyal customers. Joseph-Mathews, Bonn and Snepenger (2009) conclude that there is a direct link between an aesthetically pleasing environment and repeat purchase intentions, positive word of mouth behaviour, and favourable perception of facilities, whether the consumer is engaging in purchasing utilitarian or hedonic products/services.

3 Results

Five store atmospheric elements that affect consumer cognitive and affective responses, which in turn lead to conative responses are revealed based on the analysis and synthesis of scientific literature. Consequently, in order to specify a set of relationships providing consistency and comprehensive explanations of the consumer in-store behaviour, conceptual model of consumer in-store behaviour, theoretically representing how constructs are related to other constructs, is elaborated and expressed by three structural equations:

$$\text{Cognitive reaction} = \beta_{60} + \beta_{61} \text{ external variables} + \beta_{62} \text{ general interior variables} + \beta_{63} \text{ layout and design variables} + \beta_{64} \text{ point-of-purchase and decoration variables} + \beta_{65} \text{ human variables} + \zeta_6; \quad (1)$$

$$\text{Affective reaction} = \beta_{70} + \beta_{71} \text{ external variables} + \beta_{72} \text{ general interior variables} + \beta_{73} \text{ layout and design variables} + \beta_{74} \text{ point-of-purchase and decoration variables} + \beta_{75} \text{ human variables} + \beta_{76} \text{ cognitive reaction} + \zeta_7; \quad (2)$$

$$\text{Conative response} = \beta_{80} + \beta_{86} \text{ cognitive reaction} + \beta_{87} \text{ affective reaction} + \zeta_8; \quad (3)$$

Where:

$$\text{External variables } i = \lambda \text{ external variables } i \zeta \text{ external variables} + \varepsilon \text{ external variables } i, \quad i = \text{store font, entrances, display windows, building architecture, parking, surrounding area}; \quad (4)$$

$$\text{General interior variables } i = \lambda \text{ general interior variables } i \zeta \text{ general interior variables} + \varepsilon \text{ general interior variables } i, \quad i = \text{flooring carpeting; color schemes; lightning; scents; sounds, temperature; cleanliness; wide of aisles; wall coverings; merchandise}; \quad (5)$$

$$\text{Layout and design variables } i = \lambda \text{ layout and design variables } i \zeta \text{ layout and design variables} + \varepsilon \text{ layout and design variables } i, \quad i = \text{space design and allocation; traffic flows; placement and grouping of merchandise; waiting and dead areas}; \quad (6)$$

$$\text{Point-of-purchase and decoration variables } i = \lambda \text{ point-of-purchase and decoration variables } i \zeta \text{ point-of-purchase and decoration variables} + \varepsilon \text{ point-of-purchase and decoration variables } i, \quad i = \text{point-of-purchase displays; signs and cards; pictures and artwork; product displays; usage instructions; price displays}; \quad (7)$$

$$\text{Human variables } i = \lambda \text{ human variables } i \zeta \text{ human variables} + \varepsilon \text{ human variables } i, \quad i = \text{employee characteristics; employee uniforms; crowding; customer characteristics}. \quad (8)$$

The elaborated conceptual model of consumer in-store behaviour is visualised in Figure 1. As it can be seen, a set of five store atmospheric variables directly influence consumer cognitive reaction. The same five store atmospheric variables and cognitive reaction directly influence affective reaction. Finally, cognitive and affective reactions directly influence conative response.

All 8 latent variables (external variables, general interior variables, layout and design variables, point-of-purchase and decoration variables, human variables, cognitive reaction, affective reaction, conative response) are measured by manifest variables. As manifest variables are manifestations of the construct, indicators share a

common theme and dropping an indicator does not alter the conceptual domain of the construct, reflective measurement model is applied (Petter, Straub and Rai, 2007).

The elaborated model incorporates main store atmospherics and their influence on consumer cognitive and affective reactions which result in conative behaviour. The conative behaviour in this case is identified as approach or avoidance behaviour. Furthermore, the approach behaviour can take a long-term perspective, resulting in customer loyalty.

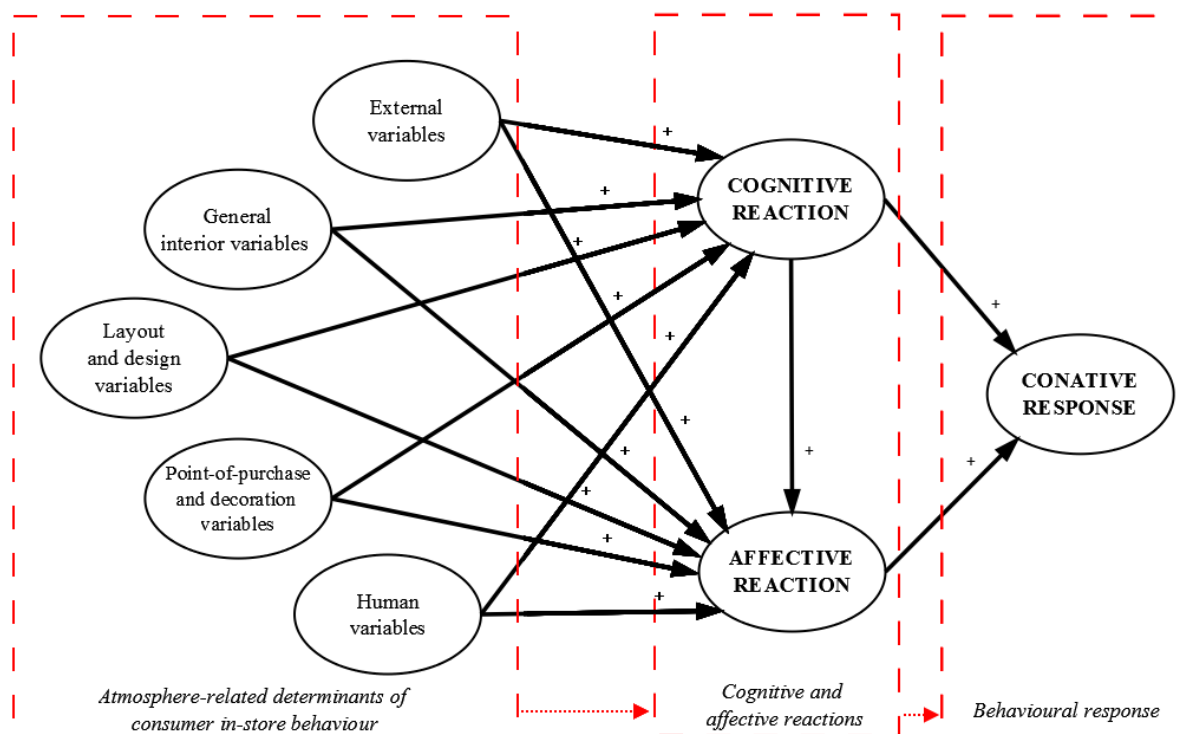


Figure 1 Conceptual model of consumer in-store behaviour

According to Hynes and Manson (2016), consumers encounter the servicescape in its entirety. Therefore, the conceptual model for the determination of consumer in-store behaviour has to encompass all the possible cues. Consequently, the elaborated model covers but is not limited to the main atmosphere-related determinants of consumer in-store behaviour. Specific elements of store atmosphere can be observed or missing regarding particular stores (differences in stores depending on product assortments, categories, pricing decisions, etc.), thus more or less indicators can be analyzed when the model is applied to the specific store. Nevertheless, the elaborated conceptual model becomes the base for the general consumer in-store behaviour empirical researches, allowing not only broadening marketing theories of consumer behaviour, but applying the results of empirical researches in practice as well, which would enhance the possibility of improved customer loyalty.

Conclusion

Store atmospheric elements that affect consumer responses are revealed based on the analysis and synthesis of scientific literature, thus substantiating the importance of store atmosphere as a driver of consumer in-store behaviour. The main store atmospherics which theoretically can be considered as determinants of consumer in-store behaviour are: external variables; interior variables; layout and design variables; point-of-purchase and decoration variables; and human variables.

All these variables determine consumer cognitive and affective reactions which influence consumer conative behaviour. The conative behaviour can be classified into approach or avoidance behaviour; moreover, the approach behaviour can take a long-term perspective, resulting in customer loyalty. Consequently, it could be stated that main store atmospherics can in a long-term perspective have influence on consumer loyalty.

The main store atmospherics and their influence on consumer cognitive and affective reactions which result in conative behaviour are incorporated in the elaborated conceptual model of consumer in-store behaviour. This model is the base for the general consumer in-store behaviour empirical researches, which would lead to the scientific and practical implications. Hence, empirical research based on the elaborated conceptual model of

consumer in-store behaviour is the direction for further researches. The generality of the elaborated model becomes the limitation of this research: specific stores contain different elements, thus regarding separate cases the elaborated model should be adjusted to the specificities of the analyzed store.

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*THE MOTIVES OF CHOCOLATE CONSUMPTION AMONG ESTONIANS AND
RUSSIANS IN ESTONIAN MARKET*

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Abstract

Purpose of the article The purpose of this article is to examine the differences of purchase motives among Estonian and Russian ethnicity in Estonian chocolate market.

Methodology/methods Consumers chocolate motives were measured by using the classification of psychological motives developed by McGuire (1976). The sample was 202 respondents (159 people were from Estonian ethnicity and 43 people from Russian ethnicity). The survey was conducted in internet. The questionnaires were available in Estonian and in Russian. The main results were analyzed by t-test.

Scientific aim Consumers' purchases are dependent on their needs and motives. In Estonia is not enough information about the motive differences of chocolate buying between two ethnic groups – Estonians and Russians, therefore it was important to find out the the differences of purchase motives in different ethnic groups.

Findings Estonians and Russians motives differed from each other. There were six McGuire's motives that by result of the t-test had statistical difference between two ethnic groups: consistency, attribution, categorization, autonomy, reinforcement, and affiliation. Estonians chocolate purchase motives were more influenced by affiliation, but Russian ethnicity was more influenced by categorization, and reinforcement. Moreover, Russians bought chocolate more frequently than Estonians.

Conclusions Current research offered important implications for chocolate producers and importers. It showed that Estonian and Russian ethnic groups need different marketing approaches in chocolate selling. Moreover, this was the first study that examined chocolate purchase motives in Estonia and it gave vital ideas how to be successful in advertising campaigns using the information about the consumer motives. Current study results cannot widen to Estonian population, because the sample was not representative.

Keywords: chocolate purchase motives, needs, McGuire, Estonians, Russians

JEL Classification: M16, M31, P20

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Introduction

A chocolate bar is like grocery products in general a low involvement product (Lybeck et al, 2006; Miquel et al, 2002). This means that consumers typically go through a limited search process with few alternatives, but what are the main chocolate purchasing motives have been usually left unresolved in the literature (Lybeck et al, 2006). Current study finds out what are the most important motives for the consumer in this product category, moreover this study brings also motive differences between two ethnic groups – Estonians and Russians in Estonia. Sahoo and Garg (2012) have said that psychological factors like motives play major roles in consumer decision-making process, because motive researches are examining “why people buy this or that product” and what is behind the choice (Rice, 1997).

Consumers’ purchases are dependent on their needs and motives. In Estonia, it is not enough information about the motive differences of chocolate purchases between Estonians and Russians, therefore the pre-mentioned research gap is the research problem in the current study. This problem is highly original, because this study is the first attempt to measure the motive differences between Estonians and Russians in the Estonian chocolate market. The purpose of this article is to examine the differences of purchase motives among Estonian and Russian ethnicity in Estonia.

This research paper is divided to the following sections: theoretical basis of the study, methodology, results, and conclusion with implications.

1 Theoretical basis of the study

Current study main focus is McGuire’s motives in chocolate purchases. Table 1 describes the whole methodology. McGuire connects two different dichotomies (cognitive-affective and preservation-growth) into four classification of 16 motives. Firstly, motives are divided as a cognitive or affective ones, secondly cognitive and affective motives will be divided into two groups: preservation motives (that help to reach to balanced level) and growth motives (that help to gain additional growth), thirdly active or passive motives (does consumer react actively or is it a just passive reaction), and finally internal or external motives (motive for achieving a new or external condition) (McGuire, 1976).

Table 1. W. J. McGuire motives

Mode	Initiation	Active		Passive	
	Orientation Stability	Internal	External	Internal	External
Cognitive	Preservation	1. Consistency	2. Attribution	3. Categorization	4. Objectification
	Growth	5. Autonomy	6. Stimulation	7. Teleological	8. Utilitarian
Affective	Preservation	9. Tension-Reduction	10. Expressive	11. Ego-Defensive	12. Reinforcement
	Growth	13. Assertion	14. Affiliation	15. Identification	16. Modeling

Source: (McGuire, 1976)

12 different motives will be briefly introduced next, but the authors will not explain here four motives: objectification, teleological, utilitarian, and identification motives, because these four motives are not strongly connected to marketing (Engel et al, 1999). First of all, it can be seen five cognitive motives.

Consistency motive is cognitive, internal, active motive. It is a need for consistent and logical information. For example, it is important that luxury product has a package with expensive outlook, elegant disain and limited quantity. If mentioned factors are in accordance to each other, then the consumer has consistent imagination of the product. On the contrary, if the package of luxury product is from cheap material, then consumer will be confused about the recieved and collected information (Hawkins et al, 2001).

Attribution motive is cognitive, preserved, internal, active motive. It is a need to understand why different things are happening, what are their reasons and consequences (Ibid).

Categorization motive is cognitive, preserved, internal, passive motive. It is a need for analyzing the information for selecting the most appropriate from it (Dendamrongvit et al, 2011).

Autonomy motive is cognitive, growth, internal, active motive. Consumers wish to be independent in their purchase choices and decisions (Harrell, 1979). This motive is connected with the need for a growth, therefore there will not be searched balanced situation and the purpose is to strive for the best (McGuire, 1976).

Stimulation motive is cognitive growth, external, active motive. Consumers react to external stimuli. For example, consumer gets desire to wear the same clothes like famous star in the commercial. Consumer wants to be successful and that is a need for stimuli (Mapes, 2006).

To begin with affective motives, tension-reduction will be analyzed firstly. Tension-Reduction motive is affective, preserved, internal, active motive. Consumers have a need for the new products, therefore consumers change their preferences, because regularly purchased same products would make life boring and unimportant. (Chernatony, 1993).

Expressive motive is affective, preserved, external, active motive. Consumers buy these products that express their personalities. It is even more important to women than men (Wallström et al, 2010).

Ego-Defensive motive is affective, preserved, internal, passive motive. Products that remain mostly the same in appearance and functionality during the years offer ego protection to the consumers (McGuire, 1976). Consumer is confident that product is socially acceptable (Hawkins et al, 2001).

Reinforcement motive is affective, preserved, external, passive motive. These consumers are usually with low self-esteem, who needs usually reinforcement that purchased product is beautiful or has the most important functions that consumer daily needs (Ibid).

Assertion motive is affective, growth, internal, active motive. Consumers wish to know other people's opinions and reactions about the purchased product (Flack et al, 2011).

Affiliation motive is affective, growth, external, active motive. It is consumers' interest to have some position in society and to have at least satisfactory and helpful relations with others. Many purchase decisions have been made thanks to a wish to remain good relations with other people. For instance, "Buy this product, your children will be amazed about it" (Hawkins et al, 2011).

Modeling motive is affective, growth, internal, active motive. If consumer feels that he is similar to some famous artist and this person wears something nice, then the consumer is also motivated to buy the same product (Ibid).

2 Methodology

Consumer purchase motives were measured by using the classification of psychological motives developed by McGuire (1976). This methodology was adapted to the contexts of Estonian country and chocolate market. There were 12 motives from 16 that were put to the survey. Current study did not measure objectification, teleological, utilitarian and identification motives based on Engel et al (1999) suggestions for adapting the McGuire methodology to marketing and consumer behavior.

Twelve different McGuire's motives were measured on five-step Likert-type agreement scale, where 1 was I do not agree and 5 totally agree. The statements were the following: "Chocolate package have to have consistent and reliable information"; "It is important to know for myself which chocolate ingredients are useful or harmful for me"; "I select the most important information from the chocolate package"; "I do not like other consumers' suggestions what chocolate to purchase"; "I need external factors for purchasing a chocolate (advertisements, suggestions, etc)"; "I always try new chocolates"; "If I would purchase certain chocolate brand it will express my personality"; "If I purchase chocolate I feel who I really am"; "If I prefer certain producer of chocolate, then I know that my friends also believe that this chocolate is tasty"; "If I prefer certain producer of chocolate then I know how my relatives/friends would react"; "If I prefer certain producer of chocolate then I belong to some group"; "I usually purchase certain chocolates because of the preferences of my friends".

The survey was divided into four sections:

- McGuire motives (12 statements)
- chocolate eating habits
- chocolate purchase criteria
- respondent characteristics (age, gender, income, ethnic group).

The survey was conducted in internet by www.freeonlinesurveys.com based on the sample of adult consumers. A quota sampling method based on ethnic group, and income were applied. The survey got 202 respondents, where 159 respondents were from Estonian and 43 respondents from Russian ethnic groups. The survey included respondents who were 18-55 years old. More than 3/4 respondents were females. The study is not representative in terms of gender and age. The proportions of ethnic groups are nearly in accordance with Estonian Statistical Office data. Sample characteristics are presented in more detail in Table 2.

Table 2. Sample Characteristics

Characteristic	Item	Number or %
Size	Number of respondents	202
Gender	Female	79.07%
	Male	20.93%
Age	18-25	78%
	26-35	14.30%
	36-45	4.95%
	46-55	2.75%
	Ethnic group	Estonian
	Russian	21.30%
Income (neto)	...-450 EUR	44.00%
	451-650 EUR	19.80%
	651-850 EUR	13.40%
	851-1050 EUR	9.90%
	1051- ... EUR	12.90%

Chocolate purchase motives between ethnic groups were analyzed by t-test. Current study main results will be introduced next.

3 Results

Figure 1 shows the frequency of eating chocolate between Estonian and Russian ethnic group. Estonians eat chocolate usually couple of times a month (33%) or 2-3 times a week (30.8%), but seldom than once a month or do not eat (4.4%). Russians eat chocolate 3-4 times a week (23.3%) or 2-3 times a week. There were not any Russian consumers in the survey who will not eat chocolate at all. 14% of Russian consumers eat chocolate seldom than once a month. The results show that Russian ethnicity eat chocolate more frequently than Estonians.

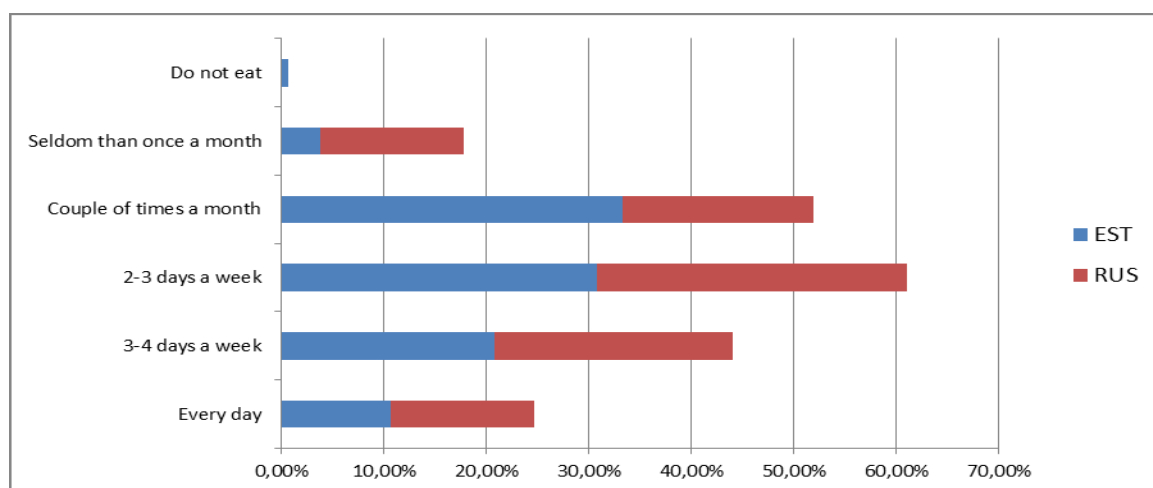


Figure 1. Chocolate eating frequency between Estonian and Russian ethnic group (% respondents)

The most popular motives for purchasing the chocolate are the following: to reduce the hunger for sweets, purchasing for presents, for raising the mood, for preparing the food. Russian group usually buys chocolate more for raising the mood and for making presents (6%-point and 5%-point respectively more) compared to Estonian group.

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The most important task of the survey was to examine the motive differences of chocolate purchases between Estonian and Russian ethnicity based on McGuire's classification of psychological motives. Testing the motive differences between two comparable groups the t-test was used. Table 3 brings you the main results, where you can see the first six motives are in bold letters, because two ethnic groups answers were there statistically significant, which means these bold motives are different in Estonian and Russian ethnicity.

Table 3. t-test results based on McGuire's methodology

Motive	P-value	Reliability
Categorization	0,004	99,56%
Affiliation	0,024	97,64%
Reinforcement	0,029	97,07%
Attribution	0,032	96,83%
Autonomy	0,032	96,82%
Consistency	0,046	95,36%
Modeling	0,115	88,52%
Expressive	0,118	88,17%
Tension-Reduction	0,160	83,97%
Ego-Defence	0,184	81,59%
Stimulation	0,189	81,14%
Assertion	0,193	80,68%

Based on Table 3 it can be concluded Estonian and Russian ethnicity behavior are different in categorization, affiliation, reinforcement, attribution, autonomy, and consistency motives in the significance level of 95%.

Categorization motive is the most different chocolate purchasing motive between two ethnic groups. Estonians do not consider chocolate as so important product for examining carefully its ingredients and other information. On the contrary, Russian ethnicity is much more concerned about the detailed information of the chocolate and separates the important and less important information.

Affiliation motive is much more important for Estonians compared to Russian ethnicity. Probably Russians want to differ more and to be more original in their preferences.

Russian ethnicity is more affected by reinforcement motive and they need more acceptance of the product from friends and relatives. This is the guarantee for the right choice.

Attribution motive is more important to Russian consumers. For example, 37.1% Estonian respondents do not care about additives in chocolate bars or even will not read this information. Only 23.3% of Russians behaved in the same way.

Autonomy motive shows people's need to be independent in the purchase decision-making process and for being free suggestions and other influences. Russian ethnicity wants to be more independent compared to Estonians.

Consistency motive is more important for Russian ethnicity. Russians search more information than Estonians from the package of chocolate and they hope it will be consistent with the content of the product.

Conclusion

As the study reveals, the chocolate purchase motives are very different between Estonians and Russians in Estonian market. Study examined twelve McGuire's psychological motives and it was statistically confirmed that Estonians and Russians are very different in six McGuire's motives – categorization, affiliation, reinforcement, attribution, autonomy, and consistency as a result of the t-test. The most important motive in chocolate purchases is affiliation for Estonians and five other motives categorization, reinforcement, attribution, autonomy, and consistency are much more common for Russians.

Current study provides implications to companies (producers, importers) about the motives of two ethnic groups' that are different in chocolate purchases. Estonians and Russians need different marketing approaches in

this product category. Copeland (2009, p. 10) has confirmed understanding consumers motives is one of the keys to successful salesmanship and to effective advertising. Different marketing theories also suggest to build your advertising campaign based on some purchase motives for targeting your customers successfully.

If you make chocolate advertisement for Estonians, then it has to be connected with McGuire's affiliation motive. You should think what should be the imaginable group, where Estonian customer wants to belong and you need to create that identity for your chocolate brand. If you are successful, your product will be the first choice for the customer.

As noticed Russians are much more involved to different motives (five). Probably it is also connected with the phenomenon that they eat more chocolate than Estonians, therefore this product group can be much more vital for them in Estonia. If you make chocolate advertisement for Russians, then it has to be connected with McGuire's categorization motive or other above-mentioned motives, except affiliation. Categorization means more relevant information about the product, therefore Russians need more informative advertisements.

This study is the first attempt to examine purchase motives of Estonians and Russians in Estonian chocolate market, thus it is vital to continue consumer motive researches between ethnic groups in this product category. Future studies need to increase the sample, because current study results are not able to widen to Estonian population due to sample size, gender, and age. Moreover, it should apply some other classification of motives to the study for getting additional information about the motive differences between Estonians and Russians.

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*HOW CAN DEVELOPERS OF SHOPPING CENTRE PROJECTS STIMULATE
THE CUSTOMERS' EXPERIENCES AT TRADE FAIRS?*

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Abstract

Purpose of the article The objective of the paper is the identification of the trade fair activities oriented at customers' experiences of retail real estate developers at different stages of the shopping centre project life cycle.

Methodology/methods Multimethod qualitative research was chosen concerning retail real estate developers' activity at trade fairs in Europe, including participant observation and a case study. The approach adopted by the authors of the paper can be called triangulation, since many qualitative research methods were applied in different periods of the research.

Scientific aim The literature on trade fairs has not so far adopted an experiential perspective. So, there is a research gap, resulting from the lack of research on the evolution of the experiences, building through the trade fair performances in the long-term development project. Therefore, the scientific aim was to partially fill this gap by examining how the influence on the senses of trade fair participants is changing, in the context of infant developers of retail real estate managing the projects.

Findings Shopping centre development projects' life cycle can be divided into the following stages: initiation, planning, preparatory execution, real execution and closure. In each of these stages the role of customers' experiences is different, and the extent of trade fair activities oriented at customers' experiences also differ. Special attention in the area of creating experiences requires second and third stages, when the booths should be places of integration, using sensory marketing, where exhibitors influence all the senses of visitors in a coherent manner.

Conclusions The paper fills the research gap, because so far scientists have occasionally addressed the experiences created during trade fairs. But the exploration of the phenomenon of using trade fairs to stimulate the visitors' senses requires the realization of further studies.

Keywords: customers' experiences, experiential marketing, project management, retail real estate, trade fairs.

JEL Classification: M31, R30

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Introduction

Retail real estate developers implement the development projects of modern retail facilities. Their customers are tenants of retail space, who are interested in renting space in future shopping centres. The most important tenants of shopping centres are, above all, international enterprises and domestic companies, originating from the national markets, which create retail trade chains and offer their own popular and strong brands, which attract purchasers. Owing to the peculiarity of the commercialisation of a shopping centre under construction, it is required, first of all, to catch the interest of anchor tenants, and then to conclude agreements and enable them to launch their retail shops on the date of the grand opening of that facility. Only when a proper level of lease is ensured (about 30% of the lease area) by some anchor tenants can the commercialisation of a retail real estate under construction be finalised – which means that other, smaller tenants can be contracted.

The present situation in the retail real estate industry – including mainly an aversion to risk and a crisis in trust – makes it even more necessary to build credibility and relationships based on trust and loyalty among entities. This fact is particularly important in the activity of developers which give promises about implementing new retail projects in a highly uncertain market more and more saturated with modern retail space. Currently, it has changed the negotiating power with regard to developers and tenants, which gives the latter a strong advantage over the former. That results directly from an excess supply of new development projects, which is connected with a decline in the tenants' demand for new retail space. The actual situation in the industry has an impact on the conditions of, and the requirements for, developers' effective relationship management with tenants in a trade fair activity oriented at the stimulation of positive experiences of tenants and other types of customers. Trade fairs deliver a lot of possibilities for influencing customers' experiences using sensory marketing and interactive marketing. Customers' previous experiences with a particular developer should also be taken into consideration.

Therefore, the objective of the paper is the identification of the trade fair activities oriented at customers' experiences of retail real estate developers in different stages of the shopping centre project life cycle. Participant observation and case study research methods were used.

1 Literature review

1.1 Contemporary understanding of customer's experience

During recent years, experience has become a topical issue in the marketing world. However, there is still confusion in business terminology, and clear definitions of experience are absent in marketing literature (Same, 2012). The term 'experience' can be understood in different ways, because in English it is both a noun and a verb, and it is used variously to convey the process itself, participation in the activity, the affect or way in which an object, thought or emotion is felt through the senses or the mind, and even the outcome of an experience by way of a skill or learning, for example (Tynan & McKechnie, 2009). A customer's experience is an interaction between an organization and a customer. It is a blend of an organization's physical performance, the senses stimulated, and emotions evoked, each intuitively measured against customer expectations across all moments of contact (Shaw, 2005). In the context of experiential marketing, but also project management and trade fairs, it can be assumed that experience is a subjective, internal consumer (visitor) response (sensations, feelings, and cognitions), and a behavioral response evoked by project-related stimuli (Brakus, Schmitt, & Zarantonello, 2009). It is often not self-generated (as some thoughts and cognitions) but induced (Schmitt & Zarantonello, 2013). The environment, full of stimuli affecting the human senses, is created by contemporary trade fairs. Experiences provided by exhibitors at trade fair organisers are based on offering visitors the chance, first, to see and examine products, and, second, to interact with booth personnel in either professional or social contexts (Rinallo, Borghini, & Golfetto, 2010).

In marketing, it can be assumed that a brand is the sum of the customer's experiences with the product or company. It is transmitted in every interaction with the customer over the lifetime of the relationship (Hogan, Almquist, & Glynn, 2005). Therefore, each of an organization's interactions with its customers (and every customer's experience) will either strengthen or weaken the relationship with them (Schmitt, 2002). There are also important previous experiences with a company's offerings and its marketing activities. Customers instinctively compare each new experience, positive or otherwise, with their previous ones and judge it accordingly (Meyer & Schwager, 2007). Previous experiences thus have the possibility of affecting future experiences (Lipkin & Heinonen, 2014).

Interactive marketing is inextricably linked with trade fairs. The term 'interactive' points to two features of communication: the ability to address an individual, and the ability to gather and remember the response (experience) of that individual. These two features make possible a third: the ability to address the individual

once more in a way that takes into account his or her unique response (Deighton, 1996). Mainela and Ulkuniemi (2013) indicated three levels of personal interaction which constitute the components of relationship management in business projects. The first level concerns person-to-person interactions, which entail building trust, applying tactical knowledge, and drawing special attention to social values. The role of the second level of personal interactions in existing relationships is distance reduction with regard to the planning and implementation of a project, the selling of ideas, and the management of sleeping relationships, i.e. using the knowledge gained during previously completed projects. The third level of personal interactions includes social and informational networks within the community sphere, in which existing, potential and sleeping relationships exist. It can be assumed that trade fair performance is reflected at those three levels of interaction.

1.2 Sensory marketing, touchpoints and customer experience management

An immanent feature of trade fairs is the ability to interact with all five human senses. Marketing that engages the consumers' senses and affects their perception, judgment and behaviour is called sensory marketing (Krishna, 2012). Because of the range of the interactions which occur in the so-called 'touchpoints', contemporary companies should recognize the need to build holistic experiences through the management of them. Touchpoints are all different ways that an organization interacts with and makes an impression on customers, but also employees and other stakeholders (Davis & Longoria, 2003). Customer experience management (CEM) is a strategy to engineer the customer's experience in such a way as to create value, both to the customer and the firm (Verhoef et al., 2009). The management of experiences is closely related to the bonding of relationships, which has been confirmed empirically (Cantone & Risitano, 2011). CEM places a greater emphasis on every interaction, thus leading to the creation of the experience, to the delivery of those promised relationships, and to the desired target customers. This approach is useful to promote an equal relationship between customers with the company, which helps to improve and strengthen the quality and length of the relationships (Das & Hota, 2014).

1.3 Trade fair activity as a tool of building relationships

Building and maintaining long-term customer relationships is the key to successful project management (Pinto & Rouhiainen, 2001). As has already been mentioned, the maintenance of these relationships depends on the delivered experiences, which must be managed in the whole project life cycle. In construction project relationship management Meng (2012) indicated project partnering, which represents short-term collaborative relationships, and strategic project partnering, which describes long-term collaborative relationships. Key elements of successful construction partnering are: trust, commitment to a win-win attitude, mutual objectives, clear definition of responsibilities, timely communication, effective problem solving, and regular monitoring of the partnering process (Hellard, 1995; Chan et al., 2004). Trade fairs enable the exhibitors to control those key elements and, by monitoring of visitors' experiences, manage their participation more effectively (Rinallo et al., 2010).

Trade fair activity management can have a powerful impact on project partnering, since exhibition events represent an important context of interaction and a relevant instrument for relationship marketing (Sarmiento, Farhangmehr, & Simões, 2015a). Relationships between customers and suppliers frequently begin or continue at trade fairs (Rice, 1992). Moreover, exhibition events provide opportunities for initiating and building relationships with key accounts (Blythe, 2002). The management of trade fair activity can be understood from the point of view of the whole marketing activities performed by one exhibitor during many events. Such an approach includes the long-term utilisation of exhibit marketing in order to effectively achieve the goals of an organisation. Consequently, participation in particular trade fairs is not accidental, and serves as a complementary element of the activities carried out during other trade fair performances (Siemieniako & Gębarowski, 2014).

Trade fairs are relevant to develop a relationship marketing strategy that involves interactions and networking with a multitude of players (Sarmiento et al., 2015a). The typical atmosphere of the B2B trade fair setting encourages socializing behaviours useful to generate bonds and commitment and, ultimately, enhances the relationship quality (Sarmiento, Simões, & Farhangmehr, 2015b). Trade fairs immerse industrial buyers in a physical and cognitive experience that requires their active and interactive participation. Under such circumstances, industrial marketers who employ experiential marketing techniques are likely to increase their trade fair performances. By deploying 'experience providers' firms can create a competitive advantage in terms of product differentiation, brand image, customer satisfaction and loyalty (Rinallo et al., 2010). In the real estate business experiential marketing has also become an important link in the process of improving customer satisfaction and brand loyalty (Zhao & Zhang, 2009).

1.4 Trade fair performance as a touchpoint

For many companies trade fairs are important touchpoints in the pre-purchase phase, apart from, e.g. websites, service centres, seminars, email and advertising (Buttle & Maklan, 2003; Lederman, 2007). Owing to face-to-face meetings trade fairs belong in the two-way communication category. This form of communication is mostly focused on sharing experiences with specific target groups, giving them a personal encounter, letting them experience the brand, and encouraging emotional appeals. In this context, direct, personal interaction between the company and the target group is instrumental in engendering unique and lasting memories (Kirchgeorg, Springer, & Kästner 2009; Kellezi, 2013).

The literature on trade fairs has not so far adopted an experiential perspective (Rinallo et al., 2010). Among other things there is a research gap, resulting from the lack of research on the evolution of the experiences building through the trade fair performances in the long-term development project.

2 Research method

A multimethod qualitative research method was chosen concerning retail real estate developers' activity at trade fairs in Europe, including participant observation and a case study. The field research was conducted by one of the authors of the paper. The approach adopted by the authors can be called triangulation, since many qualitative research methods were applied in different periods of the research (Woodside & Wilson, 2003).

The duration of the participant observation research was about two and a half years – from September 2011 to February 2014. It covered 7 consecutive cyclical exhibit events devoted to the retail real estate market, including the world's two biggest retail real estate trade fairs, MAPIC, organised in Cannes (France), as well as the five biggest trade fairs held in Poland and East-Central Europe, Shopping Center Forum (abbreviated SCF) – 3 autumn and 2 winter fairs. Participation in the cyclical trade fairs enabled the observation of the changes that occurred in developers' retail real estate project management and marketing trade fair activity oriented at customers' experiences of 6 developers serving as research units. Enterprises developing new (medium- or large-sized) shopping centres in Polish cities were chosen, with gross leasable areas (GLA) of 25,000 to 50,000 sq.m, with different level of project life cycle advancement. The longitudinal research concerned those 6 enterprises with Polish capital, which were new or infant in a retail real estate development business. The representatives of the developers under research, such as: project managers, board members and leasing specialists, were the subjects of the research and were present during the most of the trade fair events, in which the researcher also took part. In participant observation research, a few other qualitative methods have been used, such as unstructured interview, opinion poll, and analysis of secondary materials.

The longitudinal case study research was another research method concerning the developer implementing a project of a new large shopping centre in Poland. The research was conducting over 5 years (2009-2014). The results of the case study presented in that paper relate to trade fair activity, oriented at customers' experiences, during different stages of the project's life cycle of the developer under research. The researched developer organised a trade fair presentation once, with their own booth at the retail real estate trade fair SCF, which was held in September 2013 in Warsaw, Poland.

3 Results

The analysis of the data allowed us to better understand the role of customers' experiences in different stages of shopping centre projects' life cycle, such as: initiation, planning, preparatory execution, real execution and closure (Westland, 2006). It also showed the retail real estate trade fair activities of developers oriented at customers' experiences in all stages of the project's life cycle. In Table 1 is presented the extent and the methods of trade fair activities oriented at customers' experiences in different stages of the shopping centre project's life cycle amongst three types of customers. These three types of customers are:

- tenants – the leasing agreement with developers is signed,
- prospects – advanced in negotiations on a leasing agreement with developers,
- leads – considering renting a space in particular shopping centre project; this type of customer had not started negotiations on a leasing agreement.

A three-level scale of the extent of customers' experience activities was distinguished: low, medium and high. The number and the intensiveness of forms and actions conducted at trade fairs which influenced customers' experiences are the criteria for defining the particular level of the scale.

Table 1 The extent and methods of trade fair customers' experience activities in different stages of a shopping centre project's life cycle amongst three types of customers.

The stages of a shopping centre development project's life cycle	The duration of a stage	The most important type(s) of customers in stimulation the experiences	The extent of trade fair activities oriented at customers' experiences	Methods of customers' experience stimulation at trade fairs
1. Project initiation	1 year	Leads	Low extent	Interactive marketing; image, credibility and financial stability of the developer / investor
2. Project planning	1.5-3 years	Leads, prospects and tenants	At the beginning of this stage low and some time later high extent	Sensory marketing; interactive marketing; image, credibility and financial stability of the developer / investor; previous experiences in the relationship
3. Preparatory execution	1.5-2 years	Leads, prospects and tenants	Medium or high extent	Interactive marketing; previous experiences in the relationship; sensory marketing
4. Real execution	1.5-2 years	Prospects and tenants	Medium extent	Interactive marketing; previous experiences in the relationship
5. Project closure	3-6 months	Tenants	Low extent	Previous experiences in the relationship; interactive marketing

Source: authors' own elaboration

Interviews conducted during participant observation and the case study showed that the main objective of the developers under research of using trade fair activities oriented at customers' experiences was relationship development with all types of customers. In a transactional sense it meant transforming lead customers into prospective ones, and prospective customers into tenants. It also meant increasing the relationship value with tenants, meaning maximizing benefits and minimizing costs. At each stage of the shopping centre development project's life cycle the role of customers' experiences is different, and the extent of trade fair activities oriented at customers' experiences also differ.

The Initiation of the shopping centre project development in stage 1 began in the researched developers from identifying a development project as a strategic option to verifying the project as an attractive market opportunity for investors. One of the enterprises under research was developing two shopping facilities simultaneously, and the remaining companies were implementing one investment project. Some of those developers had before run manufacturing activity in the buildings located on the premises of the shopping centres to be developed. When the attractiveness of the land increased, its administrators and owners decided to carry out a development project related to shopping activity. Contrary to the above case, the other enterprises, which represented diverse businesses (such as housing development services), purchased the rights to real estates in order to develop a shopping centre.

The duration of stage 1 was very different but it lasted at least 1 year. During that stage developers' representatives took part in trade fairs mainly for information-gathering purposes and for testing the ideas of the initial concepts of shopping centre projects amongst lead customers. The level of developers' personal competencies in conducting person-to-person interactions and their project management's knowledge was the most important method of creating lead customers' experiences. The attractiveness of the preliminary concept of the shopping centre, presented in promotional paper materials, were the only sensory stimulators of the customers' experiences at this stage. The additional stimulators of lead customers' experiences were their perception of an image, and the credibility and financial stability of the researched developers (which were at the same time investors implementing shopping centre projects) which entered the retail real estate development industry. Developers' representatives were asked about the business background of the researched investors.

The project planning at stage 2 of the project's life cycle may be defined in terms of processes as started from the investor's decision about commencing the project planning to obtaining a positive appraisal of project execution conditions. Direct observations of developers' trade fair activities and the interviewees representatives of the developers under research opinions showed very clearly that the extent of trade fair activities oriented at customers' experiences increased rapidly from low to high, while developers decided that the level of advancement of shopping centre project management is enough to create positive experiences amongst all kinds of customers, especially amongst leads and prospectives. The majority of the researched developers, when

deciding to conduct the trade fair presentation, had concluded rental agreements with a few anchor tenants that sell grocery items or house and garden furnishings, making the credibility of the project higher.

Data analysis showed that undertaking the first trade fair presentation with their own booth by the researched infant developers was treated as the official launching the project on the retail real estate market. The main task for person-to-person interactions was to support the general promise about successfully shopping centre development in a timely and efficiently manner. It was important and used all three levels of personal interactions proposed by Mainela and Ulkuniemi (2013). In their trade fair presentation the developers under research used a multitude of sensory marketing tools, influencing all the visitors' senses, to make a deep impression on customers, stimulating their experiences. Examples are: multimedia presentations, exhibiting a shopping centre mock-up, music and special sounds, and exhibiting and offering snacks, drinks and specially selected fragrances. The importance of the implementation of sensory marketing tools resulted from the intangibility of the developers' proposition. The majority of the researched developers conducted trade fair presentations with their own booth in the planning stage, and they offered rental space in a non-existent shopping centre. The developers thus presented some kind of an idea of planned retail facilities and made promises that they would be constructed. That is why they were focused on conducting a trade fair performance in an attractive way. They presented what such a shopping centre would look like, and they tried to convince customers that a particular developer and its project was attractive and credible.

The third stage, which is preparatory execution, comprise the project management processes, starting from taking on the first considerable financial obligations (e.g. placing an order for the preparation of an architectural design) to declaring a readiness to order the main construction works. Different levels of the extent of trade fair activities oriented at customers' experiences were identified, from medium to high. They were dependent on the size of the shopping centre project and the progress of commercialization in the project planning stage. The second trade fair performance was conducted by those developers under research whose shopping centre projects were bigger – they had greater budgets for promotion, and whose level of commercialization was below expectations. In the preparatory execution stage the financial and sometimes construction involvement of developers was more visible than in the planning stage, so it was not so important to stimulate customers' experiences at trade fairs by sensory marketing, especially in the second half of that stage. Developers' propositions were more tangible.

Prospectives and tenants were much more focused at that stage on personal interactions during trade fairs with the researched developers' representatives. Customers' experiences were shaped by promise keeping, because during the development of retail real estate projects, prospectives and tenants devote special attention to the monitoring of the process of promise keeping by developers, with regard, among other things, to the accomplishment of milestones in a timely manner, treating the way of executing that process as confirmation of the credibility of promise making. In influencing current customers' experiences it is important to take into consideration the previous experiences, especially of prospectives and tenants, which could be positive or negative. Coherence in stimulating customers' experiences is important.

The real execution stage was defined as starting from ordering main construction works to receiving a certificate of occupancy. The extent of trade fair activities oriented at customers' experiences can be assumed as medium at that stage. The most important method of customers' experience stimulation at trade fairs was interactive marketing in terms of personal interactions related to key issues of the project's execution, such as: timetable, level of commercialization, financing, construction processes, and tenants' technical coordination. Although those issues were discussed outside the trade fairs, the researched developers attended trade fairs as participants to meet several prospectives or tenants in one place at one time. Trade fairs as a touchpoint between developers and customers created an occasion to stimulate positive experiences for all partners involved with project management.

The project closure stage was perceived as much less important in terms of trade fair activities oriented at customers' experiences. That stage might be defined as started from opening the shopping centre to finishing the processes of execution, commercialisation and financing. The most important type of customers here were tenants, and the factors which influenced their experiences were previous experiences in business relationships during all shopping centre project management.

4 Discussion

Contemporary trade fairs, despite the spread of modern forms of communication, are still an important marketing tool in the B2B market (Wiedmann, Kassubek, & Langner, 2009; Gopalakrishna & Lilien, 2012). The uniqueness of exhibition events is due to the enabling of face-to-face meetings and presenting exhibitors' offers 'in reality'. Therefore, it is unlikely that trade fairs will ever disappear, because of the need to form relationships and to network with industry members, to touch and feel products, and to sense the atmosphere and vitality that

exhibiting events generate (Fill, 2009). For this reason, for many companies nowadays trade fairs, with proper preparation of presentation, can be an important touchpoint in the process of creating holistic experiences. It is critical to analyze which touchpoints will have the greatest impact, both positive and negative, on customer behaviour and brand loyalty, and then to reallocate investments to those few key touchpoints (Hogan et. al, 2005). The results of the research conducted by the authors confirmed the importance of trade fairs as a touchpoint in the retail real estate industry.

In creating a cohesive, authentic and sense-stimulating total customer experience that resonates, pleases, communicates effectively and differentiates the organization from the competition, an organization requires an emotional connection with customers. Emotions evoke customer commitment and lead organizations to a customer experience plan that builds loyalty (Berry & Carbone, 2007). The results of participant observation and case studies also confirm this.

So far, scientific articles are occasionally concerned with the experiences created during trade fairs (Rinallo et al., 2010). In addition, the authors did not link trade fair activity with the evolution of experiences that are evoked among customers by entities implementing long-term projects. A small number of publications also relate to the use of sensory marketing in the real estate market (Zhao & Zhang, 2009). Therefore, there is a need to carry out studies on this phenomenon. The first attempt was made by the research whose results are presented in this paper.

Conclusion

The obtained results showed that during the implementation of a long-term project, at various stages developers try to induce different customer experiences. During the second and third stages of a shopping centre development project's life cycle (planning and preparatory execution) exhibitors present intangible offers – objects that do not yet exist. At those moments it is thus not possible to establish interactions with the product. Therefore, it is necessary to prepare such trade fair presentations that interact strongly with all the human senses and present the developers' offers attractively. This is particularly important in the case of infant developers who do not have a recognizable brand or extensive networks of business contacts. During the second and third indicated stages booths should be places of integration, using sensory marketing, where exhibitors influence all the senses of visitors in a coherent manner. To do this, exhibitors most frequently use: printed advertising materials (sight), shopping centre mock-ups (sight), multimedia presentations (sight and hearing), unconventional lighting (sight), original musical background (hearing), tastings (taste), and distribution of samples of goods (sight and touch). An important supplement to the tools of sensory marketing is interactive marketing, including mainly verbal presentations during face-to-face meetings. During such meetings exhibitors can use figurative language and indicate precisely the unique features of their offers.

In the next stages of the project the offers materialize, and the experiences which are delivered to customers have a different character. First of all, exhibitors present existing facilities, focusing on their physical attributes. Therefore, there is no need for extensive use of the tools of sensory marketing to create an atmosphere of something that does not yet exist.

From the conducted research emerges the final ascertainment, suggesting that the use of trade fairs as a place to stimulate customers' senses is critical during two stages of the development project of modern retail facilities – project planning and preparatory execution. Wherein, this statement refers to infant developers. But the exploration of the phenomenon of using trade fairs to stimulate the senses requires the realization of further research which will take into account the marketing activities of other entities – both operating in the retail real estate market and in other industries.

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*MEMETIC MANAGEMENT OF TOURIST SOCIAL NETWORKS
CONTENT*

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Abstract

Purpose of the article The aim of this article is to develop the model of memetic management of the tourist social network content.

Methodology/methods The main research method used was the comparative analysis of scientific literature. Individual components of the proposed theoretical model were developed on the basis of the meme concept (Dawkins, 1976), the concept of cultural selection (Aunger, 2000), the models of behaviour of social networks users (SN) AIDAT (Charlesworth, 2012) and COBRA (Muntinga et al., 2011). In order to synthesize the obtained results and develop the objectives of the future model the inductive-deductive method was used

Scientific aim The scientific aim of the work is to create a theoretical basis for building a model of the memetic management of the tourist social networks content. As a basis for discussion, the occurrence of the memetic nature of the photographs shared within virtual communities was assumed. The analysis of scientific literature has demonstrated the existence of research gaps related to the lack of scientific publications relating to the management of the selected social network content focused on memetic approach.

Findings The proposed theoretical model was based on the theory of memes as replicating units of cultural evolution. The elements of memetic content are observed within the photographs shared in tourist social networks. The essence of the proposed solution was to develop theoretical cause-effect relationships in the management of the content shared within the tourist social networks. On the basis of the study of literature, a number of relationships between the theory of memes, the process of gathering information by the group, and the way of forming the user activity within the community were developed.

Conclusions The presented study provides a contribution to the construction of theoretical assumptions for studying the evolution of the subject of photographs appearing in the tourist SN in the context of the theory of memes. At the same time the developed model can serve as a theoretical basis for: a. creation of the image of the destination and its management, targeted for specific attributes; b. creation of desirable tourist behaviour in the context of the choice of the form of tourist activity in a particular place; c. examination of the flow and pace of "mutation" of the memes within a social network; d. indication of the factors determining the "evolutionary success" of the memetic content of photographs; e. analysis of the evolutionary processes of the entire virtual community.

Keywords: memes, social networks, tourism, tourism communities, content management

JEL Classification: D01, M39, Z19

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Introduction

The aim of this article is to identify the theoretical and practical possibilities of using the theory of memes in managing certain aspects of the content shared within the tourist social networking (SNS - Social Networking Sites). SNS (e.g. Facebook, Google +) are part of the social media, which include also content communities (e.g. Youtube), virtual worlds (e.g. Second Life); virtual community games, microblogs (e.g. Twitter) and blogs. The scientific studies published to date lack any explicit reference to the theory of memes and its use in the management of virtual communities in the context of, among others, the shared content management. This lack justifies the need for research in this field. The epidemiological approach (e.g. Wang nad Wood, 2011; Freitas da Rocha et al., 2015), in which the cognitive processes and the processing of knowledge within a virtual group are referred to neurobiological phenomena, is dominant.

1 Memes

Memes are small units of cultural information, able to spread in social groups (Dawkins, 1976). The term "meme" was proposed by Dawkins (1976), by analogy with a gene as a carrier of genetic information. Memes, among others, through a variety of information channels, including SNS, can be transmitted from person to person by imitation or copying (Dawkins, 1982; Blackmoore, 2000). As in the case of genes, determining a specific characteristic and intensity, the memes are also subject to selection. Knobel and Lankshear, (2007) argue that there are memes, which are more and less "expansive", i.e. appearing among a wider or narrower spectrum of the community (as in the case phenotype conditioned by genes), through the development of specific behaviours, activities, e.g., online or through a certain way of behaving, declaration of attitudes, etc. This is consistent with the views of Gatherer (1998), who argued that the comparison of the effects of impact of two memes marked as Dawkins A and Dawkins B on a group, may result in a conclusion that one is better (i.e. the effect of its impact in the form of behaviour, change of style, change of attitudes can be observed more often) from the other. For this reason, Aunger (2000) argued that memes are subject to a process of cultural selection, which is an analogue of natural selection.

Memes have some basic attributes. These include (Shifman, 2013):

Content - part of the text, an image or a fragment thereof or any other form of communication (information transmission);

- Form - the nature of visualization / externalization of the transmission in the form of a text, an image, a melody;
- Stance - concerns the relationship between the sender of the message, the content and form, and its recipient, the relation between addresser, the information content and form, and of course the addressees.
- The last attribute is also the essence of the functioning and the spread of memes. It refers to the key statement in communication theory (Lasswell, 1948): "Who. Says what. Through Which channel. That's whom. With what effect. "
- Olson (2014) proposed a typology of memes, among which he distinguished:
- Music memes (sounds, melodies), the spread of a meme will be indicated by the repetition of the newly heard melody;
- Fashion memes (lifestyle memes) - in this case the success of a meme will be expressed by the growing number of people dressed in a certain way;
- Linguistic memes (e.g., text fragments, linguistic tricks, perhaps whole language is a big meme) - a specific expression or phrase will often appear in conversations conducted in the real world and / or in virtual reality
- Behavioural memes (connected with the behavioural patterns, personality expression) -meme will be manifested in the form of specific kinds of behaviour;
- Popcultural memes and their specific type: internet memes (Kołowiecki, 2012) where the diverse graphic content is accompanied by certain parts of the text, sometimes humorous.

2 Photographs in social networks

Photographs, in addition to information in the form of text, videos, audio, etc., are an important element of the content shared within social networks, and they can influence the perception of a particular place by people consuming the content shown in the picture.

Lo et al. (2011) indicate that 89% of tourists document their travels, and more than 41% of them share their photos on social networking sites. Sabate et al. (2014) ascertained the presence of positive correlation between posted images and the number of comments and the lack of such a relationship between videos and comments.

Within photographs, two basic types of content can be distinguished. The first is the content presented in the master plan, the so-called manifest content. The second, constituting the background for the manifest content and sometimes stimulating a completely different impression than the main content, is the so-called latent content (Kim and Stephenkova, 2015). The authors have demonstrated an important role of this component in the manner of a specific perception of the destination and in building its image. The discussed specificity results, among others, from the indeterminacy of the latent content and the enforced by this need to read its contents as if "between the lines" (Holsti, 1969). In turn, this feature stimulates users to interact - exchange of views, sharing, etc. With this in mind, and referring the fact of diversified popularity of various thematic categories of the photos published there among the SN users (Ferrara et al., 2014), we can conclude that the photographs, as such, are the contents of a memetic nature. The popularity of photography may be determined by the intensity of different activities of the SN members and the analysis of the impact by the assessment of their declared attitudes.

3 Photographs and the activities of social networks users

Photographs presented on the SNS are among the significant factors engaging social media users in cognitive, affective, and behavioural activities. Dippelreiter et al. (2008) divide the interactions of the tourism-oriented SM users into two basic types. The first one is the impact consisting in the simple virtual communication, while the second involves the exchange and sharing of information or commenting on their and others' touristic activity. Both types of interactions serve fuller perception of the surrounding reality and the removal of uncertainty related to the functioning and social activity of the unit, in its wide, also touristic perspective (Kaplan and Haenlein, 2010).

Activities of the SNS users in relation to the shared pieces of content can be described using the components of the AIDAT model - A (attention), I (Interest), D (Desire), A (Action) and T (Tell) (Charlesworth, 2012) and COBRA (including cognitive stage, affective stage and behavioural stage), where the levels of content consumption: low, moderate and high are described as subsequent levels of consumption of the content pieces (Muntinga et al., 2011). Basing on a critical analysis of the literature it was found that both of these semantical models overlap. Cognitive activities associated with the observation of the elements of the content imply affective elements, thereby building an emotional connection with the contents. This in turn triggers users' behavioural activities. Details are presented in Figure 1.

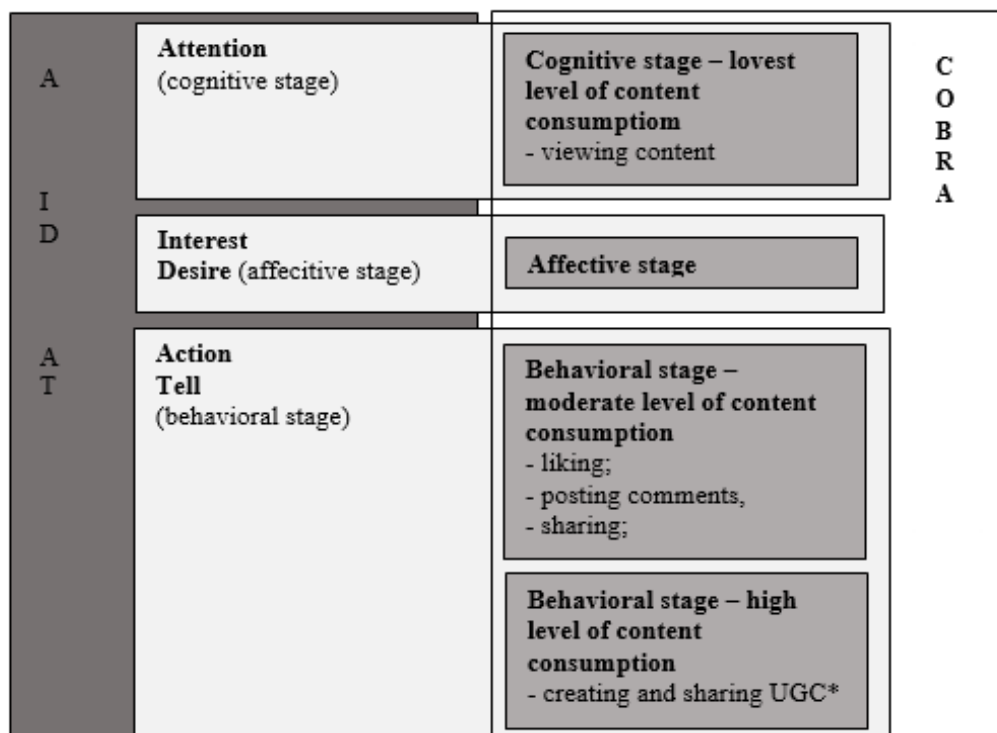


Figure 1 The comparison of selected theoretical models of SNS users' activity; *UGC – User Generated Content

4 Photographs as memes in tourist social networks content management

Highhouse et al. (2009) suggest that through the use of relevant content one can, in a desirable manner, control the impressions of the recipients (thanks to the so-called impression management - Schlenker, 1980) and, thus, influence the perception of the subject (yourself, other individuals, groups, places, phenomena) by individuals or groups of recipients. The role of this process in the self-presentation of tourist activity in the SNS is emphasized by Lo and McKercher (2015), suggesting that shared photos are expressions of satisfaction with a tourist trip and of the manner the people sharing them would like to be perceived by the recipients. Having the above, as well as the properties of the images as a content of a memetic nature (i.e. its ability to spread) in mind, it can be assumed that through the proper management of the memetic content one can significantly influence the perception of certain subjects. At the same time, the content may significantly shape and stimulate the willingness of other users to undertake different online activities of an affective, cognitive and behavioural nature. The intensity of such activities or behaviours in relation to the specific content will in turn be a determinant of the "evolutionary success" of the memetic content.

In the context of the issues presented above, the formation of group memory (transactive memory) is also one of the possibilities of using memetic content in relation to the knowledge and attitudes of the people creating social networks. Transactive memory system (TMS) is a mechanism describing a group approach to encoding (as regards the process of acquisition of knowledge by the unit), storing and processing knowledge (Wegner, 1987). At the same time TMS refers to the methods of communication taking place between the individuals forming certain groups procuring, storing and processing knowledge (Zhong et al. 2012). In turn, the units being a part of a group obtain knowledge from other community members. Chung et al. (2015) indicate that group "learning" and benefitting from the knowledge of a group is much more effective than the individual one. Using this presumption and assuming that the photographs available in the SN indicate memetic features, one can shape the knowledge and views of people in the group. At the same time, the level of impact of memes can be estimated through, inter alia, the assessment of activities associated with behavioural stage - moderate level of content consumption, using, e.g., the Edgerank ratio component qualitative evaluation (mainly the activity of the users connected with the so-called weight of the post, i.e. commenting, sharing and accepting by "liking" - each of these activities is assigned a separate point of value (Luckerson, 2015)). On the other hand, the level of impact of the meme content on the shaping, for instance, of the new attitudes of members of a group can be estimated with the use of the AIDA consumer behaviour model (Stepaniuk, 2012).

Content - the memetic content - presented within the individual photos shared on social networks can be classified on the basis of the number of attributes. In the case of the assessment of the impact of the memetic content on the image of a tourist destination, one of the most adequate models is proposed by Baloglu and McCleary (1999). Two groups of factors affecting the image (the way of reception and perception) of the area are a key element of this approach. These are the perceptual-cognitive factors and the factors related to motivations behind touristic behaviours, which at the same time can become a meme's components. Examples of thematic categories, relating to the individual factors that build the image, being at the same time the proposal of attributes for the photo of a memetic nature, have been presented in Table 1. Obviously, the attributes for a description of memetic content proposed below can be extended with another, consistently with, e.g., the thematic specificity of the virtual group, desirable effects of sharing the specific content, etc.

Table 1 The components of the model of building the tourist area image (Baloglu, McCleary, 1999)

Perceptual/Cognitive Items	Travel Motivation Items
<i>Factor I: Quality of Experience:</i>	
<ul style="list-style-type: none"> - Standard Hygiene and Cleanliness - Quality of Infrastructure - Good Nightlife and Entertainment - Suitable Accommodations - Appealing Local Food (Cuisine) - Great Beaches/Water Sports - Interesting and Friendly People - Other 	<ul style="list-style-type: none"> - Relieving stress and tension - Getting away from demands of everyday life - Relaxing physically and mentally; - Getting away from crowds; - Escaping from the routine - Other
<i>Factor II: Attractions:</i>	
<ul style="list-style-type: none"> - Interesting Cultural Attractions - Interesting Historical Attractions - Beautiful Scenery/Natural Attractions - Other 	<ul style="list-style-type: none"> - Doing exciting things - Finding thrills and excitement - Being adventurous: Having fun, being entertained - Other

<p><i>Factor III: Value/Environment</i></p> <hr/> <ul style="list-style-type: none"> - Good Value for Money - Unpolluted/Unspoiled Environment - Good Climate - Other 	<p><i>Factor III: Knowledge:</i></p> <hr/> <ul style="list-style-type: none"> - Learning new things, increasing my knowledge - Experiencing different cultures and ways of life - Enriching myself intellectually - Experiencing new/different places - Other <hr/> <p><i>Factor IV: Social</i></p> <hr/> <ul style="list-style-type: none"> - Meeting people with similar interests - Developing close friendships - Other <hr/> <p><i>Factor V: Prestige</i></p> <hr/> <ul style="list-style-type: none"> - Going places my friends have not been to - Telling my friends about the trip - Other
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Source: own elaboration based on Baloglu and McCleary (1999).

By accepting and adopting the presented contents these recipients are sort of "infected" and able to transfer them through forwarding, linking, or copying (Shifman, 2013). The acceptance and adoption of specific content by the user can be simultaneously equivalent to the acquisition of certain features "encoded" in the information, of a memetic nature. This applies, for example, to the behavioral patterns, attitudes, lifestyles, preferences and decisions that have been presented within a photograph. A similar situation, concerning mainly the level of satisfaction from staying in the hotel, was described by Smoleński (2011). Some of the hotel guests were so positively inspired by the presence of flower arrangements throughout the hotel, that it constituted for them a declared inspiration to change the decor in their place of residence.

The evolutionary nature of the above considerations is justified, first by the adopted in the work concept of a meme as an element of cultural evolution, which is able to reproduce and manifest itself. Secondly, an important premise of the evolutionary approach is the occurrence of a number of analogies in the transfer and processing of information in virtual communities and the so-called horizontal gene transfer process (Horizontal Gene Transfer - HGT). This phenomenon is based on the transfer of genetic information (genes) from one organism to another. In the case of memes, this transfer concerns the content (information) received by the audience and passed on, both in the virtual world (within a social network) and / or real world (e.g. through the acquisition of behavioural patterns). With this in mind, the processes of assimilation and implementation of memes can be divided into:

- The process of transformation – where information in graphic form (and therefore defined as a meme) is downloaded by a user from the environment (other users, groups, associations of users, community). This downloaded piece of information is as part of the next process, i.e. conjugation - it is transmitted between individuals and entities creating a social network;
- The process of transduction – where information (meme) or its part is modified by a user (e.g. by generating new content on its basis - User Generated Content - an analogy to a mutation) and made available to other members of a social network.

With this in mind we can say that by analysing the selected photographic content available in a particular community, its popularity and user activity, it is possible to draw conclusions in broad perspective relating to the dynamics of the processes of evolution of memetic content in a group. This in turn allows for a different evolutionary approach - social media content management (SMCM). SMCM was defined by Glazkov (2005) as a set of concepts, methodologies, and standards, which enable and facilitate creation, organization, and maintenance of content by means of social interaction of individuals online

The figure below presents the assumptions of the memetic model of the selected tourist social networks content management (Fig. 2). The following set of activities is being dedicated to person or persons dealing with social networks destination marketing, especially in the context of building of tourist image.

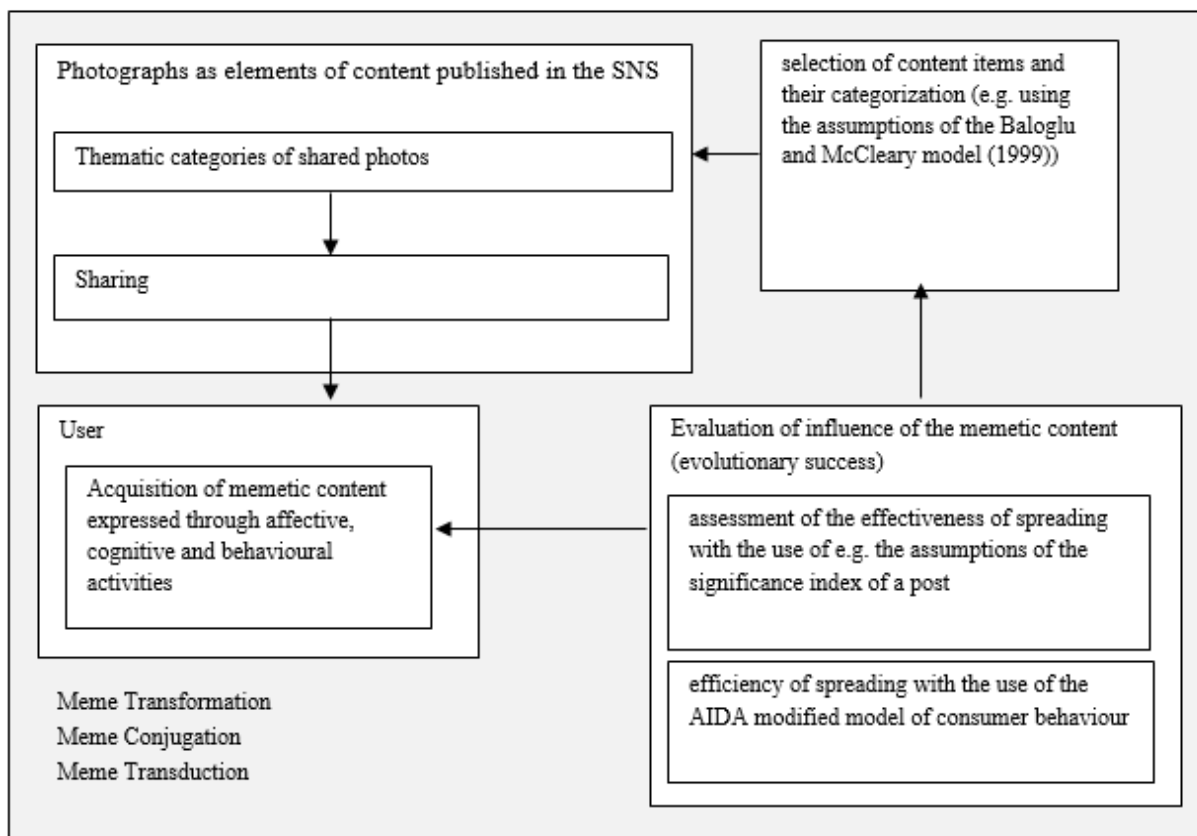


Figure 2 The memetic model of tourist social network content management

Conclusions

The Baloglu and McCleary model (1999) can constitute a base for the creation of a series of various approaches in relation to the possibility of ordering the attributes of information, made available in graphic form (and therefore potential memes conceptual schemes, expressed in the form of pictures, and reflecting the meaning desired by the author). This would be the basis for the development of specific criteria for the classification of various subject areas of photographs in tourism and available on social networks. This classification could be used primarily to assess the popularity trends within particular topic categories. At the same time, it could constitute a contribution to building the theoretical assumptions for the study of the evolution of the subject of photographs appearing in tourist SNS. In this context, a basis would be created for assessing the incidence of specific memes, and subsequently their impact on the declaration of new attitudes, behaviours within virtual groups. Secondly, it would be possible to develop a set of procedures and recommendations for:

- a) Creating the image of the destination, targeted to specific attributes, and the management thereof.
- b) Creating desirable tourist behaviour in the context of the choice of the form of tourist activity in a particular location.
- c) The study the flow and momentum of the "mutation" of memes within a social network. The key issue in this case would be the definition of the term "meme mutation" and the ability to analyse the pace and nature of this process. It seems most appropriate in this case to take into account the build-up of successive elements of the so-called User Generated Content (graphics and / or text) on the primary contents of photographs.
- d) Indication of the factors determining the "evolutionary success" of the photographs. This success would be defined through the measure of duration in the community and "infecting" subsequent users. Research of this kind would necessitate the distinction between the quantitative and qualitative attributes of pictures and an attempt to interpret the impact of those attributes on the level of involvement of users (expressed as the level of their affective, cognitive and behavioural activity).

At the same time, it would be possible to analyse the evolutionary processes of entire virtual communities. Clearly, however, it is important to first establish a set of common variables in order to describe the qualitative and quantitative differences between particular groups in a consistent way. The mechanism of such a process would be based largely on the study of the intensity of interaction between users, the level of involvement of users, expressed through affective variation, cognitive and behavioural activity of the members of the individual groups. Another group of factors that describe the virtual community could be the number and nature of the pieces of content that are "consumed" and processed by them.

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*DO GENDER AND PERSONALITY TRAITS (BFI-10) INFLUENCE SELF-
PERCEIVED OPINION LEADERSHIP?*

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Abstract

Purpose of the article Various forms of marketing communication are around for decades. But it is still more and more complicated to attract customers. One approach could be to target opinion leaders, win them, and let them communicate the marketing message instead of the company itself. This approach would require to identify opinion leaders. This paper investigates whether gender and personality traits can predict opinion leadership.

Methodology/methods The paper can be perceived as a replication in a loose sense of the term, since it replicates only a part of a previously published model and it uses fewer items to measure relevant constructs. The Big Five Inventory is measured using a 10-question instrument as opposed to a 21-question one. Opinion leadership is measured using one question instead of nine; moreover, it is investigated separately as self-perceived in the eyes of others and in one's own opinion (two variables). Generalized linear models (GLM) and Pearson product-moment correlation coefficient are used to analyze data.

Scientific aim The aim of the paper is to estimate impact of gender and personality traits on opinion leadership.

Findings Extraversion is the personality trait closest related to opinion leadership regardless whether it is self-perceived in the eyes of others or in one's own opinion. Opinion leadership in one's own opinion can be predicted even using neuroticism, and conscientiousness. The three traits are consistent with previous findings. Unlike in previous research, openness to experience was not significant. Averages of two self-evaluations are the same, although the correlation is not 1.0, but Pearson product-moment correlation coefficient is 0.7. The difference in these two evaluations is significantly influenced by openness to experience.

Conclusions From six investigated factors, extraversion has the highest influence on self-perceived opinion leadership. Since extraversion can be identified also through observation, the finding has also a practical implication.

Keywords: marketing research, opinion leadership, Big Five Inventory, questionnaire survey, quantitative research

JEL Classification: M31

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Introduction

There is a growing body of literature about electronic word of mouth communication also in information systems/e-commerce venues, before that it was about word of mouth communication mostly in marketing journals. One of the ways to influence this communication is to win opinion leaders and to send marketing messages through them.

The paper investigates whether gender and/or personality traits could be used to predict opinion leadership. Opinion leadership is often perceived as a highly domain-specific trait but e.g. Marcus and Bauer (1964) already a half a century ago confirmed that it is multi-faceted, i.e. individuals are influential independent of a specific subject area. Therefore, opinion leadership is considered to be multi-faceted also in this paper. Katz and Lazarsfeld (1955) call it generalized opinion leadership and their research still attracts attention, e.g. (Kollar, 2015).

Impact of the Big Five Inventory personality traits (Rammstedt and John, 2005) on domain-specific opinion leadership mediated through objective knowledge and generalized opinion leadership was investigated by Gnambs and Batinic (2012). They summarize that mixed findings have been reported in the past - some reported significant correlations (Brancaleone and Gountas, 2007; Mooradian, 1996), others did not (Goodey and East, 2008; Robinson, 1976). It is worth noting that probably different questions/constructs were used by different authors; and therefore also their findings differ.

Generalized opinion leadership in Gnambs and Batinic's (2012) survey used their own operationalization Gnambs and Batinic (2011) which they describe as "a variant of opinion leadership that is independent from a specific content domain and is not exclusively limited to consumer behavior such as the market maven construct" (Gnambs and Batinic, 2012, p. 611). Gnambs and Batinic's (2011) generalized opinion leadership was significantly correlated with extraversion, neuroticism, consciousness, and openness to experiences.

Gnambs and Batinic (2012) provide a literature review supporting their hypotheses why generalized opinion leadership should be influenced by

- extraversion - in general, extroverts like being with people and, in particular, they are more likely to join clubs and similar organizations, moreover, extroverts are more talkative (Booth and Babchuk, 1972; Brancaleone and Gountas, 2007; John, Naumann, Soto, 2008; Mooradian, 1996; Robinson, 1976; Venkatraman, 1989; Weimann, 1991); so even if they do not intentionally try, they are likely to influence others,
- neuroticism - low level of neuroticism translates to higher security and self-confidence, these two characteristics were observed in people high in market mavenism (Bearden, Hardesty and Rose, 2001; Chelminski and Coulter, 2007; Clark and Goldsmith, 2005; Coulter, Feick and Price, 2002; John, Naumann, Soto, 2008), and
- openness to experiences - high level of openness to experiences means that a person is more interested in various things/ideas and also explores them (Coulter, Feick and Price, 2002; Goldsmith, Clark, Goldsmith, 2006; John, Naumann, Soto, 2008; Mittelstaedt, Grossbart, Curtis, and Devere, 1976; Ruvio and Shoham, 2007); having more experience allows one to share more of interesting and relevant information, thus allowing the person to become an opinion leader.

Gnambs and Batinic (2012) do not hypothesize agreeableness and consciousness to influence generalized opinion leadership.

The research presented in this paper can be considered a replication of the generalized opinion leadership part of Gnambs and Batinic's (2012) model. The goal is to see whether the identified relationships hold even if fewer items are to be used to measure the Big Five Inventory and generalized opinion leadership, which will be referred to only as opinion leaders in the rest of the paper. Moreover, gender, which is not included in Gnambs and Batinic's (2012) model, is added as a control variable.

The rest of the paper is organized as follows: The next section describes the questionnaire and the analysis, the following section contains results, the penultimate section discusses these results and the final section summarizes the findings.

1 Data and Methodology

Data were collected in the spring semester 2014 using a broader on-line questionnaire dealing with personality traits. Respondents were students of Aalborg University. Of 186 students who started, 172 (of whom 106 were male and 66 female) fully filled in the questionnaire. Gnambs and Batinic's (2012) contained more females than males. They did not use gender in their model but the model presented in this paper will include gender.

Opinion leadership is measured using one question instead of nine; moreover, it is investigated separately as self-perceived in the eyes of others and in one's own opinion (two variables).

Gnambs and Batinic (2012) used their own operationalization (Gnambs and Batinic, 2011) of opinion leadership consisting of the following statements:

- 1 Among my friends and acquaintances, I often decide which issues are current;
- 2 My friends and acquaintances often discuss subjects that I brought up;
- 3 I usually succeed if I want to convince someone about something;
- 4 It is easy for me to influence other people;
- 5 I am often the one among my friends and acquaintances who has to approve important decisions;
- 6 I am often asked to make decisions for friends and acquaintances;
- 7 People in my social circle frequently act upon my advice;
- 8 I have the impression that I am regarded by my friends and acquaintances as a good source for tips and advice;
- 9 I often use my persuasive powers during discussions to reach agreements quickly.

Since then, they added a new item (Batinic, Appel, Gnambs, 2016):

- 10 It is important for me that my friends and acquaintances agree on basic things.

The research presented in this paper measures opinion leadership using two statements from (Gimpel, Sudzina and Petrovcikova, 2014); they used it to measure opinion leadership as a part of a self-identity construct. The instruction was "Please indicate to what degree you agree with the following statements":

"People consider me an opinion leader";

"I consider myself an opinion leader".

A 1-5 Likert scale was used where 1 meant strongly disagrees and 5 stood for strongly agree. Despite both answers are self-reported, they provide an insight in how respondents perceive their opinion leadership in the eyes of others and in their own opinion.

Gnambs and Batinic (2012) used Rammstedt and John's (2005) instrument to measure the Big Five Inventory; the instrument contains four statements per character trait (five for openness). The research presented in this paper is based on the newer version of the questionnaire (Rammstedt and John, 2007) which contains two statements per character trait. The aim is to test whether the instrument with less than a quarter of questions compared to John and Srivastava's (1999) questionnaire for the Big Five Inventory can lead to significant results. The instruction was to rate "How well do the following statements describe your personality" with statements "I see myself as someone who..."

- ... is reserved;
- ... is generally trusting;
- ... tends to be lazy;
- ... is relaxed, handles stress well;
- ... has few artistic interests;
- ... is outgoing, sociable;
- ... tends to find fault with others;
- ... does a thorough job;
- ... gets nervous easily;
- ... has an active imagination.

on a 1-5 Likert scale where 1 meant strongly disagrees and 5 stood for strongly agree. Extraversion was calculated as an average of the 1st (reversed-scored) and the 6th answer, agreeableness as an average of the 2nd and the 7th (reversed-scored) answer, conscientiousness as an average of the 3rd (reversed-scored) and the 8th answer, neuroticism as an average of the 4th (reversed-scored) and the 9th answer, and openness to experience as an average of the 5th (reversed-scored) and the 10th answer. Cronbach alphas for personality traits will not be reported since the Big Five Inventory-10 (Rammstedt and John, 2007) was not constructed with this statistics in mind.

This questionnaire was preceded by another questionnaire, approximately a week before, it contained the same Big Five Inventory-10, and respondents were asked to save the answers and provide them again later. So one of the questions not analyzed here is whether the respondents entered their answers from a week before or they filled in their current answers. Of 172 respondents, 63 personality traits ratings were from previous week, and 109 were recent.

A generalized linear model (GLM) was used to analyze impact of gender and of five personality traits (extraversion, agreeableness, conscientiousness, neuroticism, openness to experience) in three models where the dependent variables were:

- 1 opinion leadership in the eyes of others (“People consider me an opinion leader”);
- 2 opinion leadership in one's own opinion (“I consider myself an opinion leader”);
- 3 opinion leadership in the eyes of others minus opinion leadership in one's own opinion.

A multivariate approach to testing was used. Parameter estimates tables will be provided (instead of ANOVA-style tables) in order to be able to see signs of parameter estimates (not only p-values). The results should be equivalent to a multiple linear regression model estimates in case the dummy variable is set to 1 for male and to 0 for female. R^2 and R^2_{adj} are provided in order to be transparent about how much a model explains though it may be significant.

To measure correlation between answers for statements “People consider me an opinion leader” and “I consider myself an opinion leader”, Pearson product-moment correlation coefficient is used.

To test a difference between these two variables, a paired samples t-test was used.

SPSS software was used for all the tests.

To sum up the implications of the research setting, it is reasonable to expect a somewhat lower precision of measured constructs due to a lower number of questions, and the lower number of questions also means a lower granularity of values. Opinion leadership has five possible values, two most frequent of them are used by 70%+ of respondents, three most frequent of them are used by 90%+ of respondents, so the variable is by far not continuous but rather binary-ternary. Assuming that Gnambs and Batinic (2012) used also a 1-5 Likert scale (the information is not provided in the article), their opinion leadership has 37 possible values what resembles a continuous variable. So, explained variance of a model with a dependent variable with 5 possible values is likely to be worse compared to a dependent variable with 37 possible values given their precisely measure the reality. So, it is not possible to fully compare two models using R^2 .

2 Results

Parameter estimates for the generalized linear model analyzing impact of gender and of personality traits on self-perceived opinion leadership in the eyes of others are provided in Table 1.

Table 1 Parameter estimates for model 1

Parameter	B	Std. Error	t	Sig.
Intercept	2.670	.635	4.208	.000
Extraversion	.102	.096	1.070	.286
Agreeableness	-.051	.103	-.492	.624
Conscientiousness	.076	.093	.812	.418
Neuroticism	-.074	.090	-.817	.415
Openness to experience	.121	.091	1.321	.188
Gender (male)	-.066	.141	-.465	.643

The model per se is not significant (p-value = .276), $R^2 = .044$, $R^2_{adj} = .009$ and openness to experience has the lowest p-value.

Submodels were tested to see whether omissions of certain independent variables could improve p-values. Parameter estimates for the best submodel are provided in Table 2.

Table 2 Parameter estimates for streamlined model 1

Parameter	B	Std. Error	t	Sig.
Intercept	2.704	.283	9.567	.000
Extraversion	.162	.079	2.048	.042

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The streamlined model is significant (p -value = .042), $R^2 = .024$, $R^2_{adj} = .018$. Even though openness to experience had the lowest p -value in model 1, a model with only this variable would have p -value of .085.

Parameter estimates for the generalized linear model analyzing impact of gender and of personality traits on self-perceived opinion leadership in one's own opinion are provided in Table 3.

Table 3 Parameter estimates for model 2

Parameter	B	Std. Error	T	Sig.
Intercept	3.153	.695	4.539	.000
Extraversion	.158	.105	1.514	.132
Agreeableness	-.144	.113	-1.272	.205
Conscientiousness	.157	.102	1.542	.125
Neuroticism	-.119	.099	-1.204	.230
Openness to experience	-.077	.100	-.770	.442
Gender (male)	.077	.154	.496	.621

The model per se is not significant (p -value = .078), $R^2 = .066$, $R^2_{adj} = .032$. Conscientiousness and extraversion had the lowest p -values. But these two variables were not significant within one model. A model with Conscientiousness and neuroticism was significant per se (p -value = .024) but p -values for the two variables were between .05 and .1.

Submodels for extraversion, conscientiousness, and neuroticism are provided in Table 4, 5, and 6 respectively.

Table 4 Parameter estimates for streamlined model 2 - extraversion

Parameter	B	Std. Error	T	Sig.
Intercept	2.558	.312	8.202	.000
Extraversion	.202	.087	2.316	.022

The model including only extraversion is significant (p -value = .022), $R^2 = .031$, $R^2_{adj} = .025$.

Table 5 Parameter estimates for streamlined model 2 - conscientiousness

Parameter	B	Std. Error	T	Sig.
Intercept	2.573	.337	7.643	.000
Conscientiousness	.195	.093	2.092	.038

The model including only conscientiousness is significant (p -value = .038), $R^2 = .025$, $R^2_{adj} = .019$.

Table 6 Parameter estimates for streamlined model 2 - neuroticism

Parameter	B	Std. Error	T	Sig.
Intercept	3.737	.230	16.234	.000
Neuroticism	-.186	.086	-2.168	.032

The model including only neuroticism is significant (p -value = .032), $R^2 = .027$, $R^2_{adj} = .021$.

The correlation coefficient for opinion leadership in the eyes of others and opinion leadership in one's own opinion is .691, p -value < .001. This translates into Cronbach's alpha of .814, i.e. higher than Nunnally's (1978) threshold of .7.

On average, opinion leadership in the eyes of others was exactly the same as opinion leadership in one's own opinion, the difference was precisely zero.

Parameter estimates for the generalized linear model analyzing impact of gender and of personality traits on the difference between self-perceived opinion leadership in the eyes of others and in one's own opinion are provided in Table 7.

Table 7 Parameter estimates for model 3

Parameter	B	Std. Error	T	Sig.
Intercept	-.482	.525	-.919	.359
Extraversion	-.056	.079	-.711	.478
Agreeableness	.093	.085	1.089	.278
Conscientiousness	-.081	.077	-1.059	.291
Neuroticism	.045	.075	.606	.546
Openness to experience	.198	.076	2.618	.010
Gender (male)	-.142	.117	-1.218	.225

The model per se is not significant (p-value = .087), $R^2 = .064$, $R^2_{adj} = .030$. Openness to experience has the lowest p-value.

Parameter estimates for the submodel with only openness to experience are provided in Table 8.

Table 8 Parameter estimates for streamlined model 3

Parameter	B	Std. Error	T	Sig.
Intercept	-.529	.236	-2.236	.027
Openness to experience	.170	.073	2.320	.022

The model including only openness to experience is significant (p-value = .022), $R^2 = .031$, $R^2_{adj} = .025$.

3 Discussion

Comparing Pearson product-moment correlation coefficients estimated from the presented research and Gnambs and Batinic's (2012) ones, it is possible to see that the main tendency is the same - the correlation between opinion leadership and extraversion is the highest, .47 for Gnambs and Batinic's (2012) generalized opinion leadership, .16 for the opinion leadership in the eyes of others and .18 for opinion leadership in one's own opinion. As it was stressed at the end of the data and methodology section, it was expected that the relationships from this research will appear weaker due to a less granular scale.

Gnambs and Batinic's (2012) second strongest influencer of generalized opinion leadership is neuroticism with -.24, the second strongest opinion leadership in one's own opinion in this research was also neuroticism with -.16.

The third strongest influencer of opinion leadership in one's own opinion in this research is conscientiousness with .16, it was Gnambs and Batinic's (2012) fourth strongest with .19.

The second strongest influencer of opinion leadership in the eyes of others in this research is openness to experiences with 0.13 (not significant), it was Gnambs and Batinic's (2012) third strongest with .22. Openness to experiences was not correlated with opinion leadership in one's own opinion at all, the correlation coefficient was -.01. This was the biggest difference between the two measures of opinion leadership in this research.

The (zero) impact of agreeableness was virtually identical for Gnambs and Batinic's (2012) research (.01) and this research, namely .05 for the opinion leadership in the eyes of others and .01 for opinion leadership in one's own opinion. The correlation between the two measures of opinion leadership is .691 what is comparable with .696 from an analogical research focused on impact of gender and personality traits on self-perceived tech-savviness (Sudzina, 2015).

Conclusion

The aim of the paper was to analyze impact of gender and of personality traits on self-perceived opinion leadership. It was a replication of a part of a previously published model using constructs with fewer questions to

measure both personality traits and opinion leadership. There were two versions of the dependent variable used - opinion leadership in the eyes of others, and opinion leadership in one's own opinion. A 10- instead of a 21-item instrument was used to measure the Big Five Inventory. Gender was not in the previously published model.

The replication resulted in two findings being virtually the same regardless what dependent variable was used - (1) extraversion was linked to opinion leadership, it was the strongest relationship, and this relationship was positive, and (2) agreeableness was not linked to opinion leadership. Two additional results were the virtually the same for opinion leadership in one's own opinion and for the previously published model - impact of (3) neuroticism (negative relationship) and of (4) conscientiousness (positive relationship) was significant; their impact on opinion leadership in the eyes of others was a bit below the significance threshold.

The only result that was not fully the same was the impact of openness to experiences. It was significant in previous research but it fell a bit below the threshold of being significant for opinion leadership in the eyes of others, while its impact was virtually zero for opinion leadership in one's own opinion. Gender, which was not included in previous research, was not found to be significant.

To sum up, the replication yielded virtually the same results but the relationships were weaker - this could be attributed to measurement using fewer questions.

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*THE FACTORS INFLUENCING SERVICE COPRODUCTION. A QUALITATIVE
STUDY FROM THE SERVICE QUALITY PERSPECTIVE*

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Abstract

Purpose of the article The study aims to examine service coproduction in the scope of service requirements formation during interactive relations between the service provider and the customer. The study, in particular, seeks to identify factors influencing the requirements determination. These allow better knowledge of the service coproduction phenomenon by providing insight into anatomy of service requirements decisions.

Methodology/methods The study takes the qualitative research approach which allows an in-depth investigation. In particular the Critical Incident Technique is employed. Direct contact staff representatives recruited from different service sectors were interviewed by asking open-ended questions about particular incidents and the factors enabling requirements determination. 170 reliable stories were gathered and forwarded for content analysis.

Scientific aim Taking into consideration that there is a lack of insight into real coproduction dynamism and roles, as well as links between theories and practical coproduction live, the study aims to provide in-depth insight into service coproduction. The new knowledge consists primarily in figuring out the factors influencing service coproduction and performing their systematisation. The relative importance of the identified factors also makes a special point of interest in this study.

Findings The study identifies factors playing a crucial role during service coproduction. On the service provider side, first of all, these are the service provider's accumulated knowledge and capacity for maintaining effective relationships with customers. On the customer side, the possibility of obtaining information, and familiarity with the service by the customer are of particular importance. The study also demonstrates that the customer's personal features are a key coproduction factor. This factor is crucial when a service provider aims at a highly perceived quality.

Conclusions All of the identified factors make particular fields of challenge for service systems. According to the study, service providers should try to engage customers personally because it facilitates high service quality. This study is the first one in the literature taking the in-depth study approach to investigate service coproduction with reference to requirements formation, but also one of only a few exploring the service coproduction phenomenon in an in-depth manner. The study proposes a fresh insight into service coproduction compared to numerous theoretical deliberations available in the scientific "market".

Keywords: coproduction, cocreation, service, quality, qualitative study

JEL Classification: L80, M31

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Introduction

In the thinking on service, value cocreation has become an ultimate concept. The idea of service value cocreation considers two parties, the service provider and the customer, who collaborate together aiming at an individually tailored and unique service product and value in the customer's eyes (Prahalad and Ramaswamy, 2004; Vargo and Akaka, 2009). Service companies try to engage their customers more deeply in product formation, expecting to win customer loyalty, but customers also take advantage of involvement in the creation of the product for themselves, in particular product quality. Service coproduction has been elaborated by scholars in many different ways, but this topic still has a lot of fields of ignorance. One of them is how coproduction is performed when it comes to service quality assurance.

The aim of this study is to examine coproduction in the range of service requirements. In coproduction requirements emerge each time the service process takes place. Coproduction also implies that service requirements determination engages both sides of the service interaction: customer and staff. The study undertakes an in-depth investigation using qualitative methodology. The study identifies the specific activities and factors influencing requirements determination. These allow better knowledge of the service coproduction phenomenon.

1 The essence of coproduction

Coproduction is very closely related to cocreation (Chathoth et al., 2013), but a discussion of the meanings and links between these notions is not the point of this study. However, particular attention is addressed to providing a research framework of coproduction, as well as to point out existing dilemmas and fields of ignorance. Cocreation is very often mentioned in the context of service design and innovativeness. Many academics (Saarijärvi et al., 2013; Edvardsson et al. 2011; Edvardsson, et al., 2010; Morelli, 2009) underline that serious advantages emerge when the customer is deeply engaged in the service product design stage. Companies increasingly engage customers in their new product/service development processes, which goes hand in hand with more active customers who would like to be engaged in deciding on product content (Saarijärvi et al., 2013). The core of codesign consists in the latent and hidden needs of customers which are uncovered, and the potential for customer creativeness. Codesign stays in strong relation with innovativeness. According to some authors, product codevelopment with the customer's engagement is a core concept in understanding innovations in services (Edvardsson, et al., 2010). Cocreation affects company innovations and network-based innovations thanks to the occurrence of a combination of activities and interactions (Perks et al., 2012).

Etgar (2008) links coproduction to customization. In coproduction the customer plays the role of an active participant in the service process; coproduction gives the participant the potential to customize his or her world (Co-creation..., 2009). In customization the customer is provided with resources prepared in advance and defined a priori by the service provider (Chathoth et al., 2013). These resources can be used in different ways during the service process. Customization assumes limited options offered to customers, and it also meets the foundations of one-to-one marketing (Etgar, 2008). But joint creation with the participation of the service provider and the customer also takes place when a customer carries out by himself/herself selected sequences of the service process. In this case work in the service process is transferred from the service provider to the customer (Bolton and Saxena-Iyer, 2009). Authors (Xue and Harker, 2003) see this coproduction as a kind of outsourcing. When particular tasks are delegated to customers they have a chance to minimize their costs. Sometimes these are not direct financial costs but time savings. Examples include: self-checkout at stores and self-assembly furniture.

Services are not so structured as goods, and therefore coproduction has a broader meaning and can manifest itself in very many ways. Coproduction of the service product can be treated as various aspects of customer participation in various service activities (Etgar, 2008; Auh et al., 2007), and its crucial characteristic is that the customer is involved in the offering herself/himself (Ramaswamy, 2009). Scholars underline that the essence of coproduction is intense and dialoguing customer-company interactions (Grönroos and Voima, 2013; Grissemann and Stokburger-Sauer, 2012; Andreu et al., 2010; Payne et al., 2008) in which the provider's staff listen and react promptly to customer needs (Grissemann and Stokburger-Sauer, 2012). Some authors underline that customer participation is a spontaneous behaviour (Bolton and Saxena-Iyer, 2009). Others argue that the service provider's staff perform creatively and openly while engaged in coproduction (Grönroos and Voima, 2013; Dong et al., 2008).

The majority of the authors mentioned above provide wide, theoretically-driven argumentations, and many authors present normative recommendations addressed to service providers. The above-mentioned studies provide very valuable theoretical insights into service coproduction, but there are only a few empirical and practically focused studies on coproduction. For example, Edvardsson et al. (2011) present a study on service

system design from different perspectives, including the cocreation viewpoint. Mukhtar et al. (2012) propose a very specific classification of models and techniques of cocreation. Despite them, there is a real feeling of a lack of living vivid links between existing theories and practical coproduction occurrences, as well as a lack of insights into real coproduction dynamism and roles. So this study takes this idea to get in-depth insights into service coproduction. To support this aim the advantages are taken from classic quality management theory, where quality is considered to be conformance to specifications (Juran, 1992; Mason and Antony, 2000). The service requirements are chosen as a particular element of observation. This has a profound rationale: each coproduced service needs to have identified requirements as guidance for the service process, coproduction assumes that the customer is engaged in requirements determination, the service requirements emergence is the basis of the coproduction interactions.

2 Research method

The Critical Incident Technique (Flanagan, 1954) is employed in this study. Authors underline that The Critical Incident Technique can be employed to investigate many different aspects of a service over the duration of an encounter's enactment (Wong, Sohal, 2003). Lockwood (1994) explains briefly that this method is based on getting people to tell stories about things which have happened to them. The respondents' stories are gathered and afterwards analysed with the support of content analysis principles. In the presented empirical investigation the interviews were carried out with direct contact staff working in different service sectors. Attention was focused on a variety of customer service types because service coproduction occurs broadly, and the researched problem is very general in its nature.

The main questions respondents were asked are as follows.

- 1 Have you ever been in a situation during service provision when a customer influenced the shape of the service process and participated in service creation? If so, please describe when and how the service requirements related to this situation were determined? Please describe in detail.
- 2 What influenced requirements determination the most? What was the most important factor for your side, and what customer side factors influenced the requirements formation? Explain as thoroughly as you can please.

If necessary, these questions were supplemented by additional ones in order to achieve exhaustive descriptions of incidents. In particular, the set of possible factors from both sides were presented to respondents to be commented on. At the end of each incident description respondents were asked the question about how (s)he feels about the level of customer-perceived service quality. The possible answers are structured according to the five point Likert scale. 170 reliable stories reported by service staff representatives were handed in for transcription. The stories were typed into an Excel spreadsheet and forwarded for content analysis.

3 Coproduction factors

The stories reported by service staff were repeatedly analysed in terms of understanding the conditions affecting the coproduction. In particular, the factors which are crucial in establishing final service requirements were the object of story analysis. In each story, apart from the description of the core incident, attention was devoted to answers provoked by additional questions asked by the interviewers. These questions concerned typical factors affecting the requirements determination, as well as difficulties met during setting the requirements. For categorization only comprehensive descriptions of factors are treated as eligible, which means that short answers, as for instance 'yes this is an important issue' were treated as not reliable enough.

Service coproduction consists of two partnering sides meeting (Grönroos and Voima, 2013; Vargo and Akaka, 2009). Each of them brings specific conditions and limitations. During content analysis the factors influencing the requirements are identified with reference to the service provider and to the customer. On the provider side 26 categories are identified; 11 of them numbered merely one or two incidents. Each category, according to content analysis methodology, is meant as a particular factor appearing in the reported stories. Categories referring to the customer side are noticeably less numerous. There are 13 categories (factors), and 6 of them include one or two incidents qualified.

3.1 Service provider factors

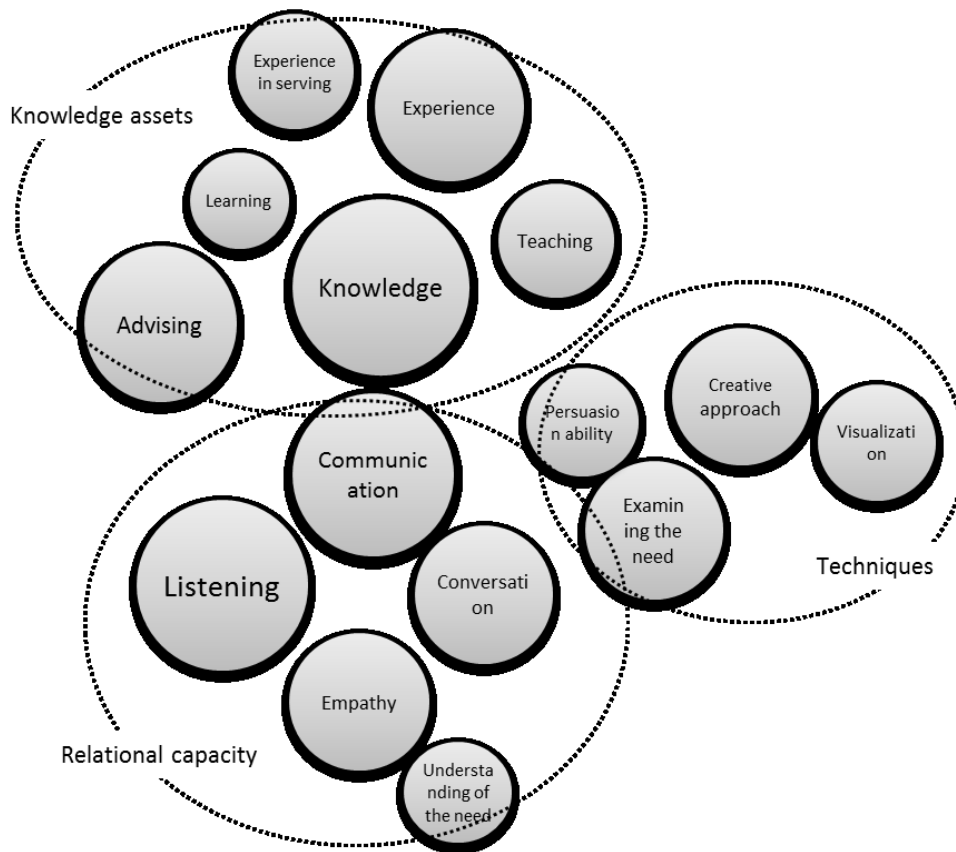
The service provider factors influencing service coproduction, and at the same time facilitating it, are presented in Table 1 beneath. The second column presents the numbers of reported incidents where factors are clearly pointed out by respondents. Another column presents the percentage of all the gathered incidents. Low numbered factors are not included in the table.

Table 1 Coproduction factors on the service provider side

Provider factors	Number of incidents	Percentage of incidents
Knowledge	55	32%
Listening	44	26%
Communication	39	23%
Advising	34	20%
Experience	29	17%
Examining the need	28	16%
Creative approach	18	11%
Conversation	15	9%
Empathy	12	7%
Teaching	11	6%
Visualization	11	6%
Experience in serving	9	5%
Persuasion ability	8	5%
Understanding of the need	6	4%
Learning	4	2%

Source: content analysis

When analysing the stories attention was focused on the accuracy and preciseness of descriptions of how service final requirements had been decided. So only clearly expressed factors were classified. The most frequent factor according to reported stories is 'Knowledge', which appeared in 55 collected stories. One of the respondents expressed this factor as follows: 'My professional knowledge is a compulsory part of my services when it comes to deciding how a service should look. Thanks to this, a customer gets to know if you actually know the job and gets to trust you' (*renovation service, male, age 18-30*). There are factors which have very similar broader meanings, but they are not the same. The factor 'Communication' (39 incidents) consists of the general meaning of communication, without specifying its forms and methods. Respondents reported it as a 'quality' of communication facilitating service requirements determination. On the other hand, the factor 'Conversation' (15 incidents) has references in service situations where talks with customers allow service providers to find out what the requirements for a service are.



Source: content analysis

Figure 1 Service provider factors semantic map

The semantic map was built based on the identified service coproduction factors (Fig. 1). The relative position of objects on the map represents the semantic relationships between coproduction factors; the circles size is proportional to incident numbers to which factors referred to. The semantic map allows the linking of factors in groups. The whole of the service provider coproduction factors form three essential semantic groups: factors related to knowledge, named 'Knowledge assets', the second group is the ability of service organizations to establish and maintain relationships – 'Relational capacity', and the third one is 'Techniques', which primarily represents techniques and technical elements occurring during requirements determination. The knowledge related factors play the most important role. The knowledge of service providers, thanks to relational ability and several techniques, allow the making of the crucial part of coproduction – effective establishment of the service requirements.

3.2 Customer factors of coproduction

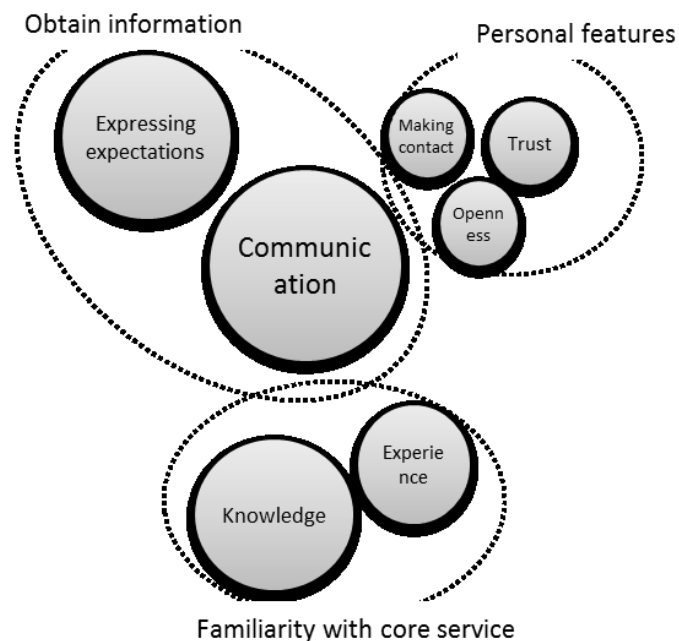
The other side of coproduction is the customer. This side also brings to coproduction particular circumstances along with particular crucial factors. The reported stories also describe the customer side role as a coproducer. The content analysis technique allowed the identification of a number of factors from the customer side which were evidently important for service requirements emergence. Unfortunately, not in all the incidents were customer factors reported by respondents, despite the fact that the respondents were questioned about them directly. However, in 111 stories customer coproduction factors were clearly expressed, which allowed their identification. The list of factors, along with the numbers of incidents, is presented in Table 2 below. The less numerous factors, identified in one or two reported incidents, are skipped.

Table 2 Coproduction factors on the customer side

Provider factors	Number of incidents	Percentage of incidents where indicated
Communication	54	49%
Expressing expectations	37	33%
Knowledge	26	23%
Experience	12	11%
Trust	5	5%
Making contact	4	4%
Openness	4	4%

Source: content analysis

According to the stories, the most frequently appearing customer factor is ‘Communication’ (identified in 54 incidents). This is meant as the customer ability of effective communication to service staff and easy exchange of information to and from the customer. One of the respondents reported this factor as follows: ‘Client communication skills were very helpful in this incident. When a client knows what he wants and can communicate it in a fairly clear and lucid manner, then such a project (a service) has a chance for success – full customer satisfaction’ (*garden designer, male, age 30-40*). Another quite frequently appearing coproduction factor is ‘Expressing expectations’ (37 incidents). In this kind of situation the service provider staff argued that the success of coproduction depended on the comprehensive and specific presentation of expectations by the customer. Another interesting finding is that there are also factors concerning some customer personal features, for example related to trust – ‘Trust’ (5 incidents).



Source: content analysis

Figure 2 Customer coproduction factors semantic map

Another semantic map is prepared for the factors concerning the customer side of coproduction (Fig. 2). The similarities in the meanings of the factors form three semantic groups. The first one is the most frequently represented in stories. This is about obtaining adequate information from customers. The information allows the exhaustive determination of the requirements for a service which is performed. This group is named ‘Obtain information’, and contains the two most frequent factors. The second semantic group is ‘Familiarity with core service’. This also contains two coproduction factors. This semantic group is noticeably less frequently

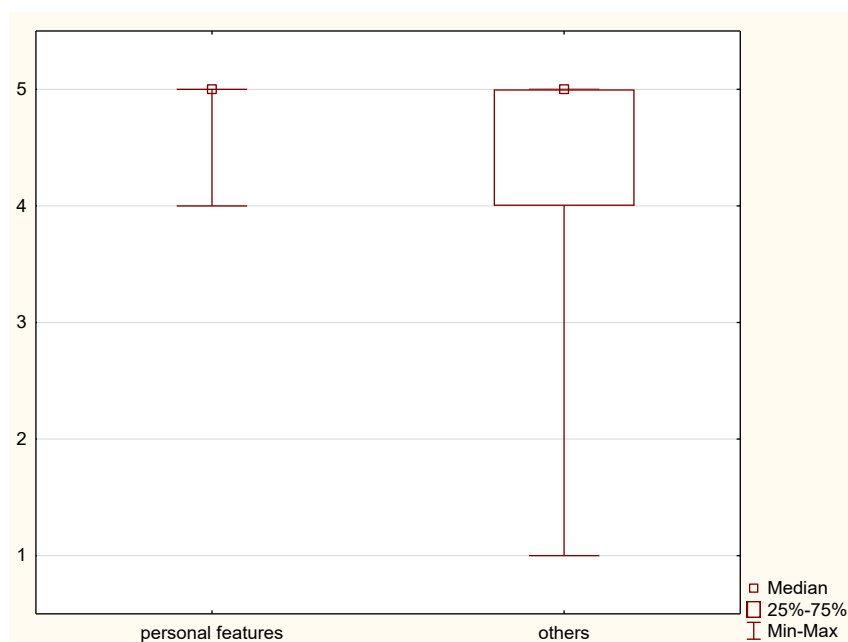
represented in the stories. As the respondents reported, the customer knowledge of a particular service, as well as his/her experience in this field, really matter when the service requirements are determined. The third group is the kinds of personal features of a customer which are important during coproduction. These are the trust shown by customers, an open approach to the service product itself and to the service provider staff, and achieving and maintaining good personal contact with service staff.

Maxwell (2010) presents the advantages of using numbers in qualitative research. He argues that it is a valuable strategy when used as a complement to an overall qualitative investigation process. So, as far as it possible statistical tests were calculated. This was facilitated by the fact that for each incident a respondent was asked to estimate the customer-perceived service quality. This variable was assessed in the Likert scale from 1 ('negatively') to 5 ('positively'). The statistical investigations were mainly devoted to checking out the link between coproduction factors and service quality level. Many combinations were calculated, but only in the case of the customer's personal features was statistically significant output observed. The incidents where the customer cocreation factors were identified were divided into two groups: one of them was where the incidents are referred to the group customer's personal features, and the second one was composed of the other incidents. The non-parametric rank-order procedure for two independent samples based on the Wald-Wolfowitz run test (Sheskin 2007, p. 525) was employed. The output is presented in Table 3 below. The statistical distribution of the two groups is presented on the box-and-whisker plot beneath (Fig. 3)

Table 3 Wald-Wolfowitz run test

N	N	Mean	Mean	Z corrected	p
Personal features	Others	Personal features	Others		
13	96	4.77	4.57	3.43	0.000595

Source: statistical calculation



Source: statistical calculation

Figure 3 The distribution of quality assessment in the two groups

As the results of the Wald-Wolfowitz test show, there is reason to reject the assumption that the perceived service quality is the same in the two groups of incidents. The p value is much less than 0.05 (see Table 3). The data presented in the box-and-whisker chart (Fig. 3) suggests that both groups have different distributions: the incidents where the customer's personal features appear as key factors of coproduction represent better quality as perceived by customers. The conclusion is that in coproduced service activities, when the personal engagement of customers occurs the provider can more confidently achieve high customer quality perception.

4 Discussion

The qualitative study approach including content analysis enables discovering gradually the real structure and included meanings in a research phenomenon. Coproduction is pretty well equipped in theoretical deliberations and concepts. This study revealed several of the factors crucial for the determination of service requirements in real service coproduction situations. First of all, this is a noticeable distinction between numbers of references to factors on the provider side and on the customer side; the proportion is 336 to 150 references. In the studied stories information characterising behaviours and attitudes of customers appeared noticeable less frequently. It is pretty clear that according to the investigated service staff, during coproduction the staff side plays the most important, more responsible and more active role. There is no doubt that the customer is treated with attention and respect as someone really important, and this is confirmed in a number of respondents' statements. But when it comes to service requirements determination, service staff feel that they are the leading and responsible party.

A relatively long list of coproduction factors referring to the staff role is related to relational abilities or knowledge. The knowledge-related factors enclose a wider range of issues. There are knowledge in the general meaning, but also issues related to gathering knowledge – learning from the customer, and sharing knowledge – teaching and advising the customer. Another issue is the knowledge obtained by practice. This kind of knowledge is recognised as the experience related to the core service and the experience related exclusively to treating the customer. Factors related to the communication enclosed not only listening and talking to customers, but also empathy and understanding. The two fundamental constructs, knowledge and communication, are supplemented by techniques utilised during service requirements determination.

On the customer side, the most frequently mentioned factors are related to obtaining information from customers, so customer communication abilities seems to be particularly important. On the other hand, customer knowledge and experience referring to the core of a service were found to be important while determining the service requirements. And finally, there is the smallest group in terms of the references number, but this group agglomerates very peculiar factors which need additional attention. This group is formed by factors of the customer's personal features.

Conclusions

The study is based on extensive insights into real incidents occurring in service provision. Attention is fully devoted to the primary issue in service coproduction – the process of defining requirements for each individual service product execution. This is the first study in the literature taking this point of view and this approach for investigating service coproduction, and yet this is one of only a few studies exploring the service coproduction phenomenon in an in-depth empirical manner. The study has identified several factors playing crucial roles during coproduction. On the service provider side these are the service provider's cumulated knowledge and capacity for establish and maintaining effective relationships with the customer; on the customer side the possibility of obtaining information, and the customer's familiarity with the service are recognized as being particularly important.

The study supports the thesis that in coproduction service providers need to find access to customers' value sphere, and when necessary strive to find additional interaction (Grönroos and Voima, 2013, p. 147). This study demonstrates that the service provider side is definitely more active when it comes to determining service requirements. This is evidenced by the observed inequality between numbers of factors and references on the side of the service provider and the customer side. It was very symptomatic and meaningful in the collected stories that the service provider staff felt very responsible for actively searching for the appropriate service content, ensuring value for the customer and solving his/her problems.

The literature states that cocreation of value, which fully manifests itself in coproduction, has a positive impact on product success (Gustafsson et al., 2012). This study had no ambitions to confirm this statement, but it leads to a related conclusion. It states that while coproduction cannot fully ensure superior service quality, customer personal engagement is really helpful in winning it. The study reveals that the personal features – trust, openness and achieving personal contact, are particularly important for customers' quality perception, and therefore providers should try to engage customers personally. Thanks to this, providers can be more confident of achieving high quality results. This observation corresponds with the conceptual framework for value cocreation by Payne et al. (2008), which points out three customer factors: emotion, cognition and behaviour. This study suggests the particular importance of the emotional component of coproduction for service-perceived quality.

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*EVOLUTION OF “DESIGN” CONCEPT AND ITS APPLICATION TO
INNOVATION IN LATVIA*

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Abstract

Purpose of the article is to research the evolution of design concept. The research subject is the evolution of the concept, its relationship with engineering, innovation and the use of design concept in Latvia.

Methodology/methods are based on systematic review of different literature sources (overview, rapid review), case studies, focus groups interviews, expert interviews.

Scientific aim is to disclose the evolution of the design concept and to reveal how the understanding has changed in the course of time. Study based on the opinion of researchers and practitioners worldwide who have recognized the importance of structured, scientifically-based, and industrially-tested theories and methods for product (and process) design and development. Design and innovation can mean the processes which are followed to produce some output. Common features of innovation and design are: generation of new knowledge, and selection/use of existing knowledge. Research in engineering design concerns the interplay between the design process and the design object. Technology like a catch-ball is used to describe objects and the networks, systems and infrastructures in which they are embedded. An invention will become part of current technology; invariably a further engineering, effort is required to bring a concept to usable reality as case study after case study reveals.

Findings relates to an understanding of the design concept which is different in several countries. The understanding of the design concept in Latvia focuses on various elements like art, fashion, apartment furnishings.

Conclusions are based on the results of the research which may lead to further investigation of design concept understanding in different countries. It is necessary to raise or to change the public's understanding of design concept as a component of well-organized process of knowledge creation, production, diffusion, and application in Latvia.

Keywords: design, design concept, engineering, industrial revolution, innovation

JEL Classification: M15, M21

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Introduction

Summarizing the different definitions, design is found as the creation of a plan or convention for the construction of an object or a system (as in architectural blueprints, engineering drawings, business processes, circuit diagrams and sewing patterns). Design philosophies (that may or may not include a guide for specific methods) are fundamental guiding principles that dictate how a designer approaches his practice. Design philosophies include the overall goal of the design and the tendencies of the designer. The perception of design concept has different approaches in different countries.

The nowadays emphasis is on the industrial design that includes the synthesis of engineering and the art elements. Engineers throughout rich of stories of success triumphing over failure history had wrestled with problems of water, minerals, building materials. The history of engineering is the basis not only for technical but also for cultural background. The idea of design and development is what distinguishes engineering from science. The stories of how engineers approached the problems have to teach us about some of the fundamental characteristics of engineering and the design evolution necessity (Petroski, 1998). The aim of the research is to disclose the evolution of the design concept on the basis of the systematic literature review and to come up with joint understanding of design concept for successful innovation development in Latvia. The research results are connected with the opinion of researchers and design practitioners worldwide as well as confirmed by interview results of the design area experts in Latvia.

1 Evolution of design terminology through the industrial revolution

The Industrial Revolution marks a major turning point in history, most important of the changes that brought about this period are: the invention of machines to do the work of hand tools; the use of steam, and later of other kinds of power, in place of the muscles of human beings and of animals; the adoption of the factory system. Every aspect of daily life was influenced by the Industrial Revolution, in particular, average income and population began to exhibit unprecedented sustained growth which also helped to improve living standards. Table 1 displays the evolution of design and design terminology particularly during the three periods of Industrial Revolution (Ashton, 1948; Bairoch, 1995).

Table 1 Evolution of design terminology through the periods of industrialization

Periods of industrialization	Evolution of design comprehension
<p>The early period (1817-1865) of the Industrial Revolution: textiles; shipbuilding and small machines with replaceable parts (Colt revolver and clocks); first railroads and steam engines</p>	<p>The main feature – the development of crafts. Realism's source was the invention of the photograph and the artist's desire to produce work that looked "real". Modernism was a break from the Realism that dominated the art world before. The rise of industrial manufacture changed the way objects were made, urbanisation changed patterns of consumption, the growth of empires broadened tastes and diversified markets, and the emergence of a wider middle class created demand for fashionable styles from a much larger and more heterogeneous population (Berlanstein, 1992; Bernal, 2006; Clapham, 1927; Dauntton, 1995).</p> <p>Design terminology is related to the art context.</p>
<p>The middle period (1865-1914) of the Industrial Revolution: large scale production of steel, oil, coal, lumber, cargo ships, railways, telegraph, automobile production, mechanization of agriculture</p>	<p>The Industrial Revolutions machine-made design in the textile arts, for example, romanticism and folk tradition in all manner of crafts, Art Nouveau marked the beginning of Modernism and took nature as its inspiration. The use of decorative elements in domestic settings could be viewed as metaphors for the status of the individual in society population (Berlanstein, 1992; Bernal, 2006; Derry and Trevor, 1993; Parke, 1980).</p> <p>Design terminology is related to the art context.</p>
<p>The late period (1914-1973) of the Industrial Revolution: organized labor, assembly line production; increasingly sophisticated machines; department stores; nuclear power; modular buildings</p>	<p>The period of the industrial arts, the first use of the term "industrial design", processes derived from the crafts were integrated into commercial production creating what became known as the industrial arts, industrial and product design were highly regarded. Bauhaus and "Scandinavian design"- beautiful, simple designs, with an emphasis on enjoying the domestic environment population (Berlanstein, 1992; Bernal, 2006).</p> <p>Design terminology is related equivalent to both art and engineering context.</p>

The post-industrial period:

IT technologies contribute innovation, knowledge, future orientation

The Design Thinking/Design Theory helps designers and researchers serve business, industry, and the public sector for positive social and economic outcomes, explores strategic design as an opportunity to create value through innovative products and services. Period emphasizes design as service that succeeds through rigorous creativity, critical inquiry (Tate and Nordlund, 1995).

Design terminology is more related to engineering, less - to art or both awareness integrated equivalent.

With regard to information of Table 1 authors can conclude that the periods of industrial revolution created demand for satisfaction of belongingness and esteem needs for a much larger population. Design significance grew up with the increase of people's needs. The post-industrial period sign as design thinking/design theory period associate with self-actualization needs - realising personal potential, self-fulfillment, seeking personal growth and peak experiences. Design which includes two ideas, social and economy, is the part of marketing strategy through this period.

2 The background of the contemporary design awareness

The word 'design' originated in Italy in the 16th century and was widely used throughout Europe in conjunction with arts. By crowd information source Wikipedia the following design disciplines are known nowadays: Applied arts; Architecture; Automotive design; Benchmarking design; Biological design; Communication design; Configuration design; Engineering design; Environmental graphic design; Experiential graphic design; Fashion design; Game design; Graphic design; Information architecture; Industrial design; Instructional design; Interaction design; Interior design; Landscape architecture; Lighting design; Military design methodology; Modular design; Motion graphic design; Product design; Process design; Service design; Software design; Sound design; Systems architecture; Systems design; Systems modeling; Transition design; Urban design; User experience design; Visual design; Web design etc., indicating the broad application of the design concept. This is the reason to study the comprehension of design concept in the particular country. The movements which most influenced the emergence, development and comprehension of so diverse contemporary design are shown in Table 2.

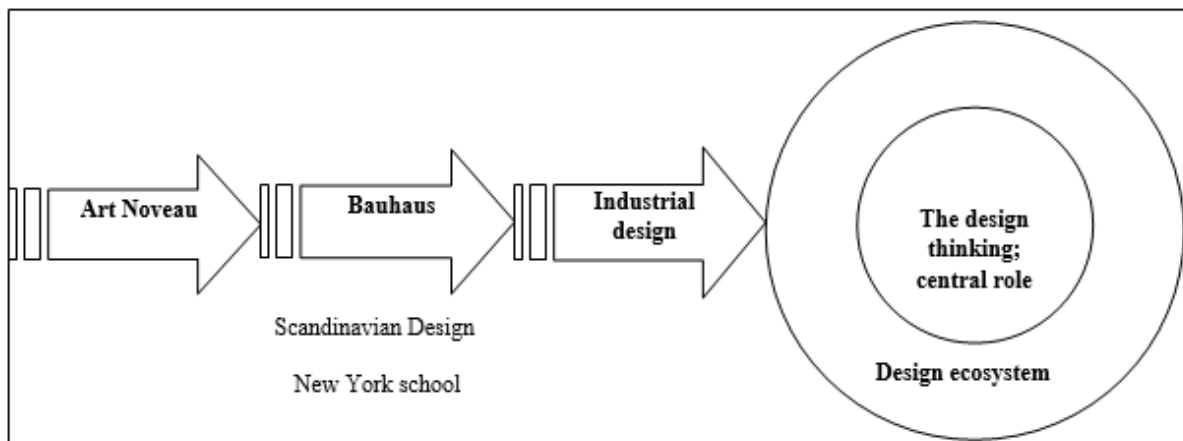
Table 2 The background of the contemporary design awareness

Research area	Comprehension	Outstanding representatives
Industry	<p>The Bauhaus is the theory of form over function, synthesis of art and craft. The school emphasized a strong understanding of basic design, especially the principles of composition, color theory, and craftsmanship, in a wide array of disciplines. The most basic tenet of the Bauhaus was form follows function, the idea focus on the productivity of design. Movement sought to embrace 20th century machine culture in a way that allowed basic necessities like buildings, furniture, and design, to be completed in a utilitarian but affective way (Bauhaus Design Movement, 2015).</p> <p>Scandinavian design means beautiful, simple, clean designs, inspired by nature and the northern climate, accessible and available to all, with an emphasis on enjoying the domestic environment. The term "Scandinavian design" originates from a design show that traveled the US and Canada under that name from 1954 to 1957 (Creagh et al, 2008).</p>	Walter Gropius, Hannes Meyer, Ludwig van der Rohe
	<p>New York school emphasizes modernism which "means integrity; it means honesty; it means the absence of sentimentality and the absence of nostalgia; it means simplicity; it means clarity", the American approach to modern design (Meggs, 1997).</p>	Paul Rand
	<p>Simplicity and directness of design works, ability to identify the nucleus of a design problem and to express it with images that become glyphs, or elemental pictorial signs, that exert great graphic power (Meggs, 1997).</p>	Saul Bass
	<p>The German school's program is intended to enhance the engineer's thinking during innovative work thereby contributing to the overall design process the scope of his method of creative or innovative thinking is general, although it is mainly aimed at engineers (Tate and Nordlund, 1995).</p>	Altshuller
	<p>There is a necessity to improve industrial performance to use product design research to improve the overall product development process called "total quality development" (Tate and Nordlund, 1995).</p>	Clausing
	<p>One of the goals would be to establish an "academic discipline for design and manufacturing in order to obtain better performance", because both engineering and management structures require fundamental, correct principles and methods to guide decision making in design (Tate and Nordlund, 1995).</p>	Suh

Arts	<p>Art Nouveau shared certain features with Romanticism, the Preaphaelites, the Symbolists, and the Arts and Crafts Movement, although each differed in various ways. Art Nouveau has a distinctive visual look; artists readily employed new materials, and did not turn their backs on mass-produced or machined surfaces (Teaching Art Nouveau, 2000).</p> <p>The Bauhaus art's theory was based on the analysis of individual elements such as the point, line and plane that so titled his writings. Kandinsky, like Albers, believed that true design only arose through the perceptual collaboration of composition and color, of which red, blue, and yellow were considered of highest importance (Bauhaus Design Movement, 2015).</p>	<p>Joseph Maria Olbrich, Gustav Klimt</p>
Architecture	<p>Art Nouveau philosophy that art should become part of everyday life, it employed flat, decorative patterns that could be used in all art forms. Typical decorative elements include leaf and tendril motifs, intertwined organic forms, mostly curvaceous in shape, although right-angled designs were also prevalent in Scotland and in Austria (Teaching Art Nouveau, 2000).</p> <p>Bauhaus encouraged the embrace of modern technologies in order to succeed in a modern environment. The most basic tenet of the Bauhaus was form follows function. The Bauhaus became the twentieth century's most important college of architecture, design and art (Bauhaus Design Movement, 2015).</p>	<p>Antonio Gaudi Hector Guimard</p> <p>Walter Gropius</p>

Source: Analysed by author, based on literature overview

Fig.1 shows the path from design comprehension as an art concept to nowadays design thinking concept. Technology is the cornerstone of design thinking. Petroski in 1998 described technology as the catch-ball term used to indicate objects and networks, systems and infrastructures in which they are embedded. Technology is clearly context-dependent and ever evolving, engineers play a central role in influencing how it develops. An invention will become a part of current technology. Engineers not only affect but effect technological development and helps us to fully understand why a thing looks and works the way it does , in the context of its times, technology, and culture” (Petroski, 1998).



Source: Authors original

Figure 1 The background of the contemporary design awareness

2 Design as an innovation concept

Henry Petroski in 1998 highlighted the systemic approach of engineering and design as a basis for innovation. Chesbrough (2003) has carried out a deep analysis of the innovation process in the post-industrial period, “which no longer depends only on the activity generated within firms, but requires the interaction of agents from the environment, knowledge generators and innovation-incentivising policies”. The driving force of economic development in the post-industrial stage is no longer manufacturing as in the periods of industrialization, but the production and dissemination of socially organized knowledge. Major characteristics created by founder of a post-industrial society theory Bell in 1973 are available. It is important to highlight some of this characteristics: the increasing substitution of "knowledge"—especially "theoretical" knowledge; services and education; intellectual technologies; professional knowledge; theory (models, simulation, systems analysis); future oriented (forecasting, planning); a consequent increase in the rationalization of social and political life (Bell, 1973; 1976; Jiménez-Sáez et al, 2011). The design thinking/design theory is a significant part of knowledge on which the future technologies are based.

Design philosophies as the fundamental guiding principles that include the overall goal of the design and the tendencies of the designer varies between different companies in the different countries. A number of industrial designers have made a significant impact on culture and daily life. There are some examples of the design philosophy principles of well-known design practitioners:

- 1 Finding simplicity for the future in metaphors from the past, many of Apple's recent iconic products were designed by Sir Jonathan Ive. The development of the excellent designs has been based on the essential features of the 6 Pillars of Steve Jobs's - an American information technology entrepreneur and inventor, cofounder, chairman, and chief executive officer of Apple Inc. The principles are: craft, above all; empathy; connection with the feelings of the customer; "design thinking"; a process that emphasized empathy with user needs; friendliness of high-tech devices (The 6 Pillars, 2016).
- 2 Steve Howard's, the IKEA's Chief Sustainability Officer's vision is "to create a better everyday life for the many people" (includes company's co-workers, customers, suppliers and the communities where they live) have got strong sustainable values in company's design culture (Yoneda, 2016).
- 3 Steven Eppinger, Professor of Management, Professor of Management Science and Innovation, and Professor of Engineering Systems at Massachusetts Institute of Technology believes that the most striking elements of the recent evolution in product design practice are design development speed, digital processes, complexity management, outsourcing and offshoring, customer involvement, innovation networks, sustainability (Darlan and Eppinger, 2011; Ulrich & Eppinger, 2011).

There are some approaches of the few well-known experts to guiding principles of design. Insight of the design process as a whole described in the next section of an article.

2.1 Design, engineering and innovation

A Henry's Petroski book "Invention by Design. How Engineers get from Thought to Thing" provides some insight of the design process as a whole. Primarily the board directors order the firm's design manager to form a group consisting of members of market research, production, sales, and design departments, and to look into what new product could be made utilizing the company's experience. The engineer, often acting as an inventor or designer, plays a central role in such considerations, whether the product be paper clips or computer chips. How a thing functions is often where engineers begin with quest, and no object that fails to function properly can be considered truly beautiful or perfected. It is important to keep in mind and to go back to fundamental assumptions in scrutinizing and interpreting the results of engineering analysis. As long as one does not question the validity or recognize the restrictiveness of basic assumptions, one can overlook the fact that they are limiting one's interpretation of results. Henry Petroski considers that analysis carried out with the aid of the most complex of computer models is no less subject to such mayopia. There is a necessity to focus on fundamental assumptions. Errors in engineering can have disastrous consequences, it is especially important for engineers to be reflective and alert in their design and analysis. Engineering and design needs an analysis by understanding the similarities, details (Petroski, 1998).

Design is a part of marketing strategy. There are two ideas, social and economy, of engineering. Early-nineteenth century definition: the art of directing the great sources of power in nature for the use and convenience" and the next century: „The art of doing well for one dollar, what any bungler can do with two". The design and implementation of effective strategies can solve the business problems. (Petroski, 1998). Henry Petroski highlights the systemic approach of engineering and design as a basis for innovation. He writes: "The automobile, no matter how well engineered and technically advanced, would not be a very effective vehicle where is not for the network of roads, including the bridges and tunnels carrying them over water and through mountains, that developed along with the horseless carriage. Imagine how different a machine the automobile would have to be if there were not a string of gasoline stations across the country. Such contexts which develop along with inventions and in which inventions develop into innovations involve systems and infrastructure which shape technology and its use. Engineers not only affect but effect technological development. We can fully understand why a thing looks and works the way it does only by understanding its development, in the context of its times, technology, and culture" (Petroski, 1998). It would be an essential task to illustrate the ideas described in the book with a practical example of the design process as a whole in relation to the specific industry.

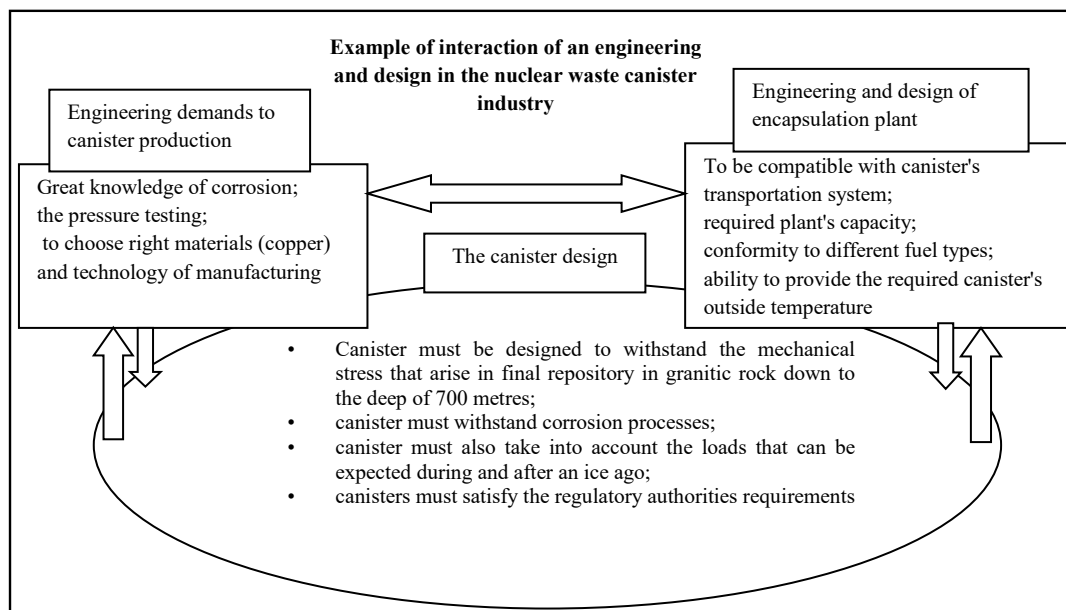
2.2 Case study of the design and engineering relationship

The stages of product development process are: Planning; Concept design; System level design; Detailed design iterations; Integration and test; Release. The stages of the process are generally separate and sequential, except for the detailed design stage, which includes several internal iterations before the prototyping can begin.

This design method is a directly applicable research contribution, and provides companies with a framework for efficiently designing product development process. The detailed design stage is illustrated with the example (see Figure 2).

During the work on this research one of the authors had an opportunity to take part in the study visit to Oskarshamn, Sweden, in December of 2015 due to the participation in the European Commission program Horizon 2020 Euratom project – “BRILLIANT – Baltic Region Initiative for Long Lasting Innovative Nuclear Technologies” – coordinated by Lithuanian Energy Institute. The main purpose of the visit was an attendance of SKB, Swedish Nuclear Fuel and Waste Management Company which is tasked with managing Swedish nuclear and radioactive waste in a safe way. One of the SKB units is the nuclear waste Canister Laboratory within which interviews of experts were provided.

As Sweden is one of the innovation leaders in the European Union, production of the country is based on an advanced design thinking, it would be worthwhile to find out about the process of product development, design and engineering relationship in the Swedish enterprises. An example of the design and engineering relationship shown in the Fig.2 is based on the results of expert interviews provided in December of 2015 in the nuclear waste Canister Laboratory in Oskarshamn. Due to the OECD Radioactive Waste Management Programmes pays great attention to the waste management. Radioactive waste is "...any material that contains a concentration of radionuclides greater than those deemed safe by national authorities and for which no use is foreseen" (International Atomic Energy Agency, 2009). Most civil radioactive waste is produced by nuclear power generation, but a wide variety of sectors including medicine, agriculture, research, industry and education use radioisotopes and produce radioactive waste. Regardless of the future of nuclear power, the need to control and manage radioactive waste will persist for many decades. The objective of any radioactive waste management programme must be that undue burdens on future generations are avoided. More than three decades of hard work have Sweden a safe and reliable system of managing and disposing of radioactive waste. The encapsulation plant is an important component in this system. There is every reason to have respect for the spent nuclear fuel. For a long time the fuel will contain radioactive substances that are harmful to both man and environment. Today there is no technology available to render spent nuclear fuel harmless. It is necessary to make sure that no one could come into contact with it. The canister is the barrier that is primarily supposed to guarantee safety. The purpose of the canister is to keep the spent fuel complexly isolated for a very long time. The canister is supposed to remain intact for a very long time, it must withstand both corrosion and high loads. The canister must satisfy exacting demands. It must remain leaktight at least 100,000 years while withstanding the high pressure that arises deep down in the rock. Both the design and different parts of canister and the choice of material in the different components are based on the design premises of the canister. By design premises is meant the general requirements stipulated on the function of canister. These determine the detailed design of the different parts of the canister (SKB, 2013).



Source: Authors original based on the results of the expert interviews

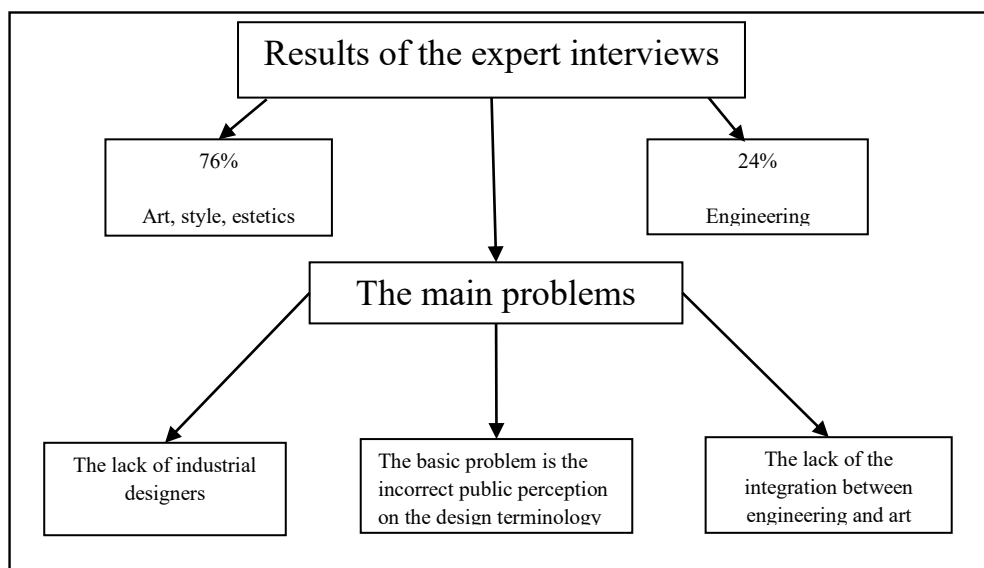
Figure 2 Example of interaction of an engineering and design in the nuclear waste canister industry

On the basis of this example, we can conclude that the design terminology of the highly developed innovative country is more related to engineering; design is a part of company's and industry as a whole strategy.

3 Understanding of Design Concept in Latvia

To clarify an awareness of design concept in Latvian the experts of design area were interviewed and questionnaires of public opinion were provided. Authors provided interviews with the following experts of design area: the lecturers of design as a sub-discipline represented in Faculty of Mechanical Engineering, Transport and Aeronautics of Riga Technical University (RTU), and specialists of RTU Design Factory known by its creative methodology and product development. Questionnaires of public opinion were provided as field research. Period of interviews were January-February, 2016, 153 respondents in total were questioned. Figure 3 reflects the results of the investigation. The public opinion of design terminology is limited to its comprehension as an art, style, estetics whereas the experts of design area considers that the basic problem of design comprehension in Latvia is the incorrect public perception on the design terminology. Design comprehension must be based on the synthesis of engineering and art elements. There is a necessity for industrial designers in the enterprises of Latvia. Design comprehension must be based on the synthesis of engineering and art elements.

The design understanding in Latvia (76% art, style, estetics comprehension and only 24% engineering approach) could be explained as a result of 50 years behind the Iron Curtain where Latvia was a part of the drab world of Soviet consumer goods, all muddy hues, clunkiness and hard angles. The Soviet military dictatorship is known as a society with little concern for the well-being of its civilian subjects "The Soviet Union built a society of existence that so differed from the Western capitalist model — which was intrinsic to the definition of design in the canonical literature of the field — that even the most basic notions of design do not apply" (Guirk, 2011). The common Western success story of industrial design as a marketing strategy to increase sales, very diverged from design comprehension in the Soviet Bloc. The Latvian economic history is significantly affected from the specific features of this period.



Source: Authors original based on the results of the expert interviews

Figure 3 Understanding of Design Terminology in Latvia

Conclusion

As a result of research would be the conclusion that design comprehension differs in the various sectors of society and in the different countries. Swedish example leads to the significant feature of the post-industrial society where the design thinking helps designers and researchers serve business, industry, and public sector for positive social and economic outcomes. The case of the design comprehension in Latvia relates to art, only the rare use of the term "industrial design" is observed. This features (sounds pretty incredible) corresponding to the late period of the Industrial Revolution. The main disadvantages in Latvia are: the basic problem is the incorrect

public perception on the design terminology; the lack of the integration between engineering and art elements; the lack of industrial designers.

Design comprehension in Latvia should be the subject for future investigations. To change the public's understanding of design concept and to find the overlapping areas of public opinion and experts view on design comprehension, it is necessary to emphasize a well-organized process of knowledge creation, production, diffusion, and application. An analysis of the present existence of the post-industrial society characteristics in economy of Latvia in order to get a clearer idea of the scientific and technological situation in the country is necessary. The design thinking is an integral part of knowledge as a factor characterizing the post-industrial society. 24% of the engineering comprehension of design thinking would be a good base for further development of design thinking and the relevance of design theory in Latvia.

Acknowledgment

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**SECTION 4
CORPORATE SOCIAL RESPONSIBILITY: INTERACTION OF
BUSINESSES, SOCIETY AND THE STATE**

*STATISTICAL EVALUATION OF THE DEGREE OF ECONOMIC
INTEGRATION OF GEORGIA WITH THE WORLD*

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Abstract

Purpose of the article The purpose of the present paper is to identify the methods of statistical evaluation of Georgia's economic integration with the world and calculate the methods of an integration coefficient on the example of Georgia.

Methodology/methods We conducted the study by using the methods of statistical survey, grouping and analysis: relative-value, mean-value, time series and statistical variation introduction methods. The trend was identified by using simple methods, such as average absolute increase and mean annual growth rate and linear function as an analytical method.

Scientific aim The scientific aim of the paper is to determine and calculate the coefficient of integration of Georgia with the world economy, as the total aggregated mean arithmetic value of the mean values of the percentages of the integration coefficient values in gross domestic product for each factor calculated in dynamics.

Findings It was found that the coefficient of integration of Georgia with the world economy was 20,2% in the considered period. If considering that the percentage value of this coefficient may vary from 0 to 100. It should be considered that we evaluated the level of integration of the countries by using a three-step scale based on an equal-interval grouping: I. Low (0-33%); II. Average (33,3-66,6%), and III. High (66,6%-100%). As the integration coefficient of Georgia in the world economy in 2008-2014 was 20,2%, this means that Georgia realized only 20,2% of its foreign economic relations potential in this period.

Conclusions In general, it should be noted that the degree of integration of Georgia in the world economy is quite low and has deteriorated since 2003-2008. As per our calculations, it has decreased by 1,1%. As it turns out, the reduction of the index of integration was mostly the result of the reduced share of investments in GDP.

Keywords: statistics, integration, method, coefficient, quality, prognosis, dynamics.

Jel Classification: C1.

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Introduction

Today the globalization has become a crucial issue in the everyday political, economic or social and cul-tural life. (Abesadze,N., 2015b) From the strategic point of view, it is very important for Georgia to en-hance the world trade - the economic, financial and other kinds of relations, especially when the foreign interests of Georgia lie in sharing the advanced European values and experiences, and joining the Europe-an Union. (Abesadze, 2014).

Within the background of the globalization processes taking place in the world economy, one of the principal preconditions for the development of Georgian economy is the availability of highquality statistical data depicting the integration processes. (Abesadze, N., 2015a) It is a fact that the success of the develop-ment of the national economies immediately depends on the degree of the countries' participation in the processes of integration.

By considering the modern level and scales of the intensified integration processes, one of the major fac-tors in determining the foreign policy strategy is the correct assessment by using the statistical methods of the integration processes. For this purpose, the statistical information depicting the course of events and their relevant analysis is needed. It is at this point where the importance of reliability of the statistical in-formation is particular clear. In addition, the right expectation of the change of the integration processes allows identifying the necessary resources and adequate regulations. Georgia is forming as a connecting bridge between Europe and Asia (Silagadze, Zubiashvili, 2015) Using such an approach to integration has led to a particular interest in its scientific study by using the statistical methods. The scales of the integra-tion processes fixed in the country and striving to the world values, changes in the social-economic life, rates of economic development and revealed trends required a novel comprehension of the theoretical issues of statistics depicting the integration processes and introduction of the practical methodological mechanism, which is scientifically approved in the world statistics based on the international experience.

Following the above-mentioned, the purpose of the paper is to identify of the statistical evaluation of the degree of integration of Georgia with the world and calculation of the integration coefficient on the example of Georgia.

The subject of the paper study is the quantitative indicators of the economic integration of Georgia with the EU, and the object of the study is the major trends in the economic integration with the EU countries in 2008-2014.

The theoretical base of the study was the works by Georgian and foreign scientists and economists concerning this topic. The following authors are worth mentioning: V. Papava, A. Silagadze, G. Ghaghanidze, L. Korganashvili, T. Kandashvili, M. Khmaladze, N. Paresashvili, R. Putkaradze, N. Gelitashvili, O. Abesadze and others. Their works describe the economic aspects of the Euro-integration processes, expectations of the Euro-integration, challenges and problems of Georgia, etc.

The calculation and evaluation of the integration coefficients are of a great practical value, as they can be used as the basis for rating the countries. The indicator can also be calculated according to the groups of the countries. The indicator calculated for each country shows the integration level of eth given country in the world economy what will allow analyzing the genera integration level and structural analysis.

We conducted the study by using the methods of statistical survey, grouping and analysis: relative-value, mean-value, time series and statistical variation introduction methods. The trend was identified by using simple methods (average absolute increase and mean annual growth rate) and linear function as an analytical method. During calculation of coefficient of Integration we used types of statistical data: absolute, relative and average values.

The scientific aim of the paper is to determine and calculate the coefficient of integration of Georgia with the world economy, as the total aggregated mean arithmetic value of the mean values of the percentages of the integration coefficient values in gross domestic product for each factor calculated in dynamics.

1.1 Calculation of the integration coefficient

The methods to calculate the degree of integration of Georgia in the world economy are based on the identification of the principal factors having an impact on the country's integration with the world economic processes. Such factors are: relations with the rest of the world in respect of primary incomes, current transfers, foreign trade, investments and foreign debt. As tourism in Georgia is a priority in the development of the country and its share in GDP tends to increase regularly, by considering the recently identified trends, the revenue gained from the international tourism in GDP was added to the system of indicators of the integration of the country with the world economy.

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Naturally, at the beginning, we calculated the shares of the indicators for each factor in GDP in dynamics (Abesadze, O., 2015a) (See Table 1).

Table 1. Share of indicators in GDP

Relations with the world: (percentage share in GDP)	2008	2009	2010	2011	2012	2013	2014
Primary incomes	9,3	8,9	10,3	13,4	14,5	13,3	12,5
Current transfers	9,6	10,3	10,9	10,9	10,5	10,5	10,8
Foreign trade	60,9	52,3	59,6	64,1	65,8	67,7	69,3
Investments	12,2	6,1	7,0	7,7	5,8	5,8	7,7
Foreign debt	19,4	25,2	28,0	24,7	25,3	26,4	26,5
Revenue from the international tourism	0,6	0,9	3,2	3,9	5,3	6,4	6,0

Source: Author's own compilation based on the materials of the National Statistics Office of Georgia, 2016

Then, we calculated mean arithmetic values of the indicators in columns and rows. The results are given in the last column and row. Then, we calculated the mean arithmetic values from the mean percentage values of the gained indicators of foreign economic relations and gained the coefficient at the crossing of the last column and row (See Table 2).

Table 2. Aggregate indicators of the integration coefficient

Relations with the world: (percentage share in GDP)	2008	2009	2010	2011	2012	2013	2014	2014
Primary incomes	9,3	8,9	10,3	13,4	14,5	13,3	12,5	12,5
Current transfers	9,6	10,3	10,9	10,9	10,5	10,5	10,8	10,8
Foreign trade	60,9	52,3	59,6	64,1	65,8	67,7	69,3	69,3
Investments	12,2	6,1	7,0	7,7	5,8	5,8	7,7	7,7
Foreign debt	19,4	25,2	28,0	24,7	25,3	26,4	26,5	26,5
Revenue from the international tourism	0,6	0,9	3,2	3,9	5,3	6,4	6,0	6,0
Mean value of the sum of indicators of foreign economic relations, %	18,7	17,3	19,8	20,8	21,2	21,7	22,1	20,2/20,2

Source: Author's own compilation based on the materials of the National Statistics Office of Georgia, 2016

This is in fact the aggregated sum of the foreign economic relations and the coefficient of integration with the world economy, and is 20,2%.

As the coefficient describes the degree of integration of Georgia with the world economy, the indicated value means that Georgia could realize only 20,2% of its potential of foreign economic relations.

It is clear that the percentage value of this coefficient may vary between from 0 to 100. Naturally, its value close to 0 means that the country has no foreign relations at all, while its value close to 100 means that the country develops only at the expense of foreign relations (Khlmaladze, 2012).

For the comparative analysis of the dynamic picture of Georgia's integration with the world economy, we calculated the integration coefficient based on the above-referred indicators by considering the data of 2003-2008 as well. The gained value of the integration coefficient was 21,1% meaning that Georgia could realize 21,1% of its potential for foreign economic relations in this period. When evaluating the integration coefficient, we used the principle of mechanical distribution and assessed the level of integration of the countries by using a three-step scale based on the equal-interval grouping: I. Low (0-33%); II. Average (33,3-66,6%), and III. High (66,6%-100%). Based on this classification, in 2008-2014, Georgia was among the countries with low level of integration.

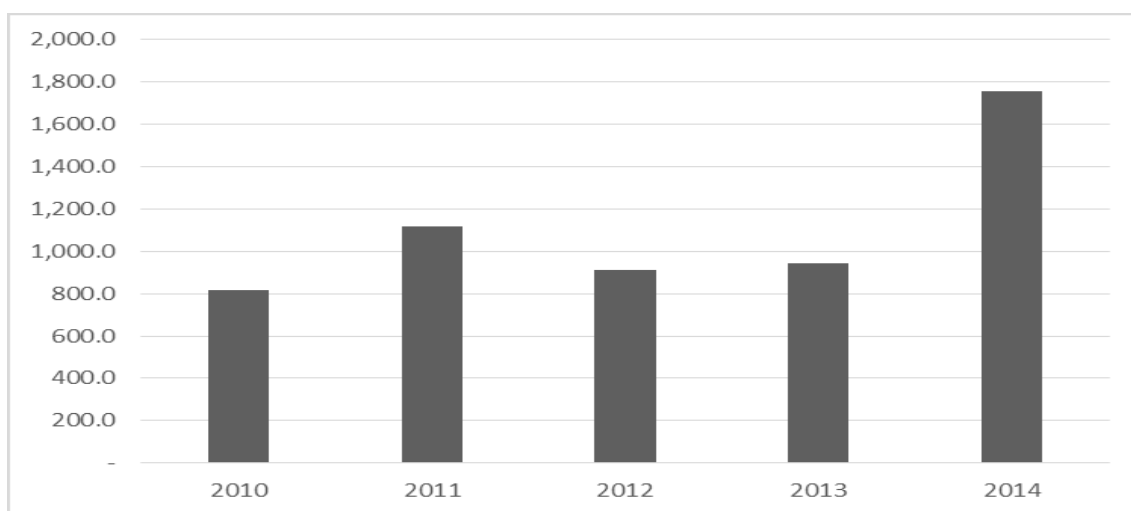
It is a fact that a major part of the population of Georgia lives on the money transfers from foreign countries, including the CIS or EU countries. Surely, the value of such funds will have a certain affect on the degree of integration of Georgia with the world economy. As per the declared data, an average foreign package per

household is 36 Gel (i.e. 10 Gel per capita). This is 42,9% more the same indicator of 2010 and 80% more than that in 2008. Only in 2014, the volume of money transfers was 1 440 754,3 USD, including 30,3%, or 436 062,7 USD from the EU and 53,5%, or 770 781.8 USD from the CIS countries (Abesadze, O., 2015b). It is true that the size of transfers was 2,5% less than that in the previous year, but it has shown a trend of absolute growth in recent years. Out of the EU countries, the greatest funds, as expected, arrive from Greece, Italy, Spain, Germany and UK; as for the CIS countries, Russia ranks the first in the respect, followed by Azerbaijan and Kazakhstan.

As we have seen, the degree of integration of Georgia with the world economy is quite low showing a fall of 1,1% since 2003-2008 as our calculations evidence (Gaghanidze, 2011). Despite the favorable current investment environment in Georgia both, for local and foreign investors (the investment environment in Georgia is liberal, the country offers equal opportunities to local and foreign investors, there is free market economic policy, there are only 6 types of taxes and with reduced tariffs, the country has a favorable geographical location and its investment potential increases making Georgia more attractive for foreign investors), it turned out that the investments were mostly reduced at the expense of the reduced share of investments calculated in GDP. This is what the statistics evidences.

1.2 Foreign direct investments in Georgia

The size of foreign direct investments in Georgia was 1272 mln. USD in 2014 what is 35% more the fixed value of foreign direct investments in previous year (Papava, 2015). The highest value of foreign direct investments of 2 015 mln. USD was fixed in 2007 what is 69,3% more than the same value in the previous year. High rates of investments were maintained to August of 2008. After a drastic fall, high rates of the foreign direct investment growth are seen from 2010. This value in 2011 increased by 37% since the previous year and made 1 117.2 mln. USD; in 2012, the size of investments in Georgia decreased by 18% (912 mln. USD); (Abesadze, O., 2015b) The year of 2013 was very important for the economy of Georgia, as the economy and business in the country were freed from the political press, a liberal environment to develop production was established in the country and entrepreneurs were allowed to identify the developmental priorities for their businesses on their own, surely with their property rights protected. (Silagadze, 2013) In 2014, the size of investments was 1255 USD what was 37% more than the same indicator in 2013 (Fig. 1).



Source: National Statistics Office of Georgia, 2016

Figure 1. FDI in Georgia in 2010-2014 (Million US Dollars)

As per the data of 2014, the size of reinvestment was 21% of the total foreign direct investments. The table below shows the share of reinvested funds in the total FDIs in 2010-2014.

Table 3. Reinvesting of foreign direct investments in Georgia in 2010-2014

	Year	2010	2011	2012	2013	2014
Index						
Share of reinvestment in total FDI, %		28	30	13	29	21

Source: National Statistics Office of Georgia, 2016

As it can be seen, the lowest value of the specific weight of reinvested funds received as the revenue from the primary investment in the foreign direct investments was fixed in 2012 what evidences that only 13% of the revenue from the investment was reinvested following the unfavorable investment and business environment for the investors. In 2013, this value nearly doubled what is a positive trend, but decreased by 8% in 2014 and made 21%.

Such a tendency led to the reduction of the mean investment value thus reducing the average share of investments in GDP in dynamics.

On the background of the economic picture of Georgia, we can conclude that this coefficient gives a real picture of the degree of integration of Georgia with the world economy, which unfortunately is quite low. Therefore, the government of Georgia has been facing a significant challenge: to develop an optimal plan for the country's economic development, promote the revival of domestic production and strengthening the process of integration of Georgia in the world economic space. All of the above mentioned will promote the simulating the expansion of economy and generally, the economic development of Georgia (Abesadze, N., 2015a).

Discussion

Different scientists expressed different views of the integration coefficient. Some scientists, e.g. Prof. M. Khmaladze, do not include the revenue from the international tourism in the integration coefficient. Consequently, the share of tourism in GDP was not taken into account when calculating the integration coefficient. However, we think that the share of tourism in GDP should be taken into account for such a calculation, as tourism is a priority for the development of the economy of Georgia and the number of international inbound tourists increases regularly. Therefore, the indicator modified by us describes the degree of integration more thoroughly. In addition, the size of money transfers, what is so important for Georgia, must be taken into account.

Of course, other relative indicators, too can be used in calculations what will obviously improve the methodology to calculate the coefficient of integration

Conclusion

So, we can briefly formulate the integration coefficient of a country with the world economy as a total aggregated mean arithmetic of the mean values of the percentages of the indicators in GDP for each factor of the calculation.

Generally, it should be noted that the degree of integration of Georgia with the world economy is quite low (20,2%) what has been deteriorated since 2003-2008 as our calculations demonstrate (it decreased by 1,1%). As mentioned above, the present investment policy in Georgia is favorable both, for local and foreign investors. Besides, despite the liberal investment environment in the country, as there are equal opportunities for local and foreign investors and free market economic policy, the investment potential of Georgia is improved making the country more attractive for foreign investors, as it turned out, the reduction of the index of integration is mostly the result of the decreased share of the indicators in GDP calculated based the investments.

By considering the general economic picture of Georgia, we can conclude that this coefficient describes the degree of integration of Georgia with the world economy in real terms. In our opinion, provided the integration coefficients of the countries are calculated on a regular basis, such a calculation may well become the basis for rating the countries.

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*ANTICIPATED TRENDS OF GEORGIA'S INTEGRATION WITH THE
EUROPEAN UNION*

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Abstract

Purpose of the Article It is known that countries wishing to affiliate with EU must meet certain criteria. We set demonstration of the expectations for Georgia to get close to these criteria as goal of our paper meaning that we aim fixing real indicators based on calculated forecasts.

Methodology/methods The study used methods of statistical survey, grouping and analysis: mean-value, time series and prediction. Leveling and prediction were done by simple methods based on average absolute increase and mean annual growth rate. Linear function was used as analytical method; autoregression and creeping mean ARIMA-type model were used as complex methods by adding a trend component identified with computer software Eviews-6.

Scientific aim Scientific aim of the paper was to thoroughly analyze criteria needed for EU-association, such as GDP per capita, unemployment and inflation rates, percentage value of country's total foreign debt to GDP, indicators of state budgetary deficit, calculate predictive values of each indicator and identify expected trends of approaching EU countries.

Findings Of the major indicators for EU-association, Georgia is likely to meet three: the share of foreign debt will not exceed 60% of GDP, inflation rate will be maintained as single-digit and joint budgetary deficit will not exceed 3% of GDP. As for other two requirements, GDP per capita of 10-12 thousand USD and maximum 10% rate of unemployment, Georgia is unlikely to meet them.

Conclusions Thus, of the requirements for Georgia to integrate with EU, the country will likely to reach three: rate of inflation will be maintained as single digit, joint budget deficit will not exceed 3% of GDP and foreign debt of the country will not exceed 60% of GDP. As for other criteria, their major indicators in Georgia still fall back EU countries.

Keywords: Statistics, Methods, integration, Coefficient, forecast, indicators.

Jel Classification: C1.

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Introduction

After the collapse of the Soviet Union the development process of market economy in post-Soviet countries went in different directions. (Silagadze, Zubiashvili, 2015)

Today, the globalization has become a crucial issue in the everyday political, economic and social and cultural life. From the strategic point of view, it is very important for Georgia to enhance the world trade - economic, financial and other kinds of relations, especially when it is in the foreign interests of the country to share the advanced European values and experiences and join the European Union. Seeking sustainable economic development Georgia tries to intensify trade relations with the EU. EU market with its outstanding import potential gave good opportunities, same time the attractiveness of EU market make the competitive situation very tough. (Gaganidze, 2015) In order to form the right economic policy of the country, it is necessary to conduct a theoretical and practical research of integration of Georgia with the world economy, to study the foreign economic contacts quantitatively, to reveal the major developmental trends, to calculate their predictive indices, to estimate the results correctly and to develop appropriate political-economic proposals and preventive measures. (Abesadze, N., 2015) Therefore, the statistical assessment of the expectations of integration with the EU and necessary achievable indicators is very important.

The theoretical base of the study is the works by Georgian and foreign scientists and economists around this topic. The following authors are worth mentioning: V. Papava, A. Silagadze, G. Ghaghanidze, L. Korganashvili, N. Abesadze, M. Khmaladze, N. Paresashvili, L. Dzebisauri, R. Putkaradze, T. Kandashvili, T. Atanelishvili, N. Gelitashvili and others. Their works describe the economic aspects and expectations of Euro-integration, challenges and problems of Georgia, etc.

We conducted the study by using the methods of statistical survey, grouping and analysis: mean-value, time series and prediction methods. Leveling and prediction was done by simple methods: average absolute increase and mean annual growth rate. As for analytical methods, a linear function was used, and out of complex methods, autoregression and creeping mean ARIMA-type model were used by adding a trend component, which was identified by means of computer software Eviews-6. In our case, the most accurate was a linear function method with the indicators calculated with it being most reliable.

The scientific aim of the work was to do a thorough analysis of the criteria for a country to affiliate with the EU, such as: GDP per capita, unemployment and inflation rates, percentage value of the total foreign debt of a country in relation to GDP and state budgetary deficit indicators, calculation of predictive values of each indicator and identification of the expected trends in approaching the EU countries.

1 The requirements for the EU-association

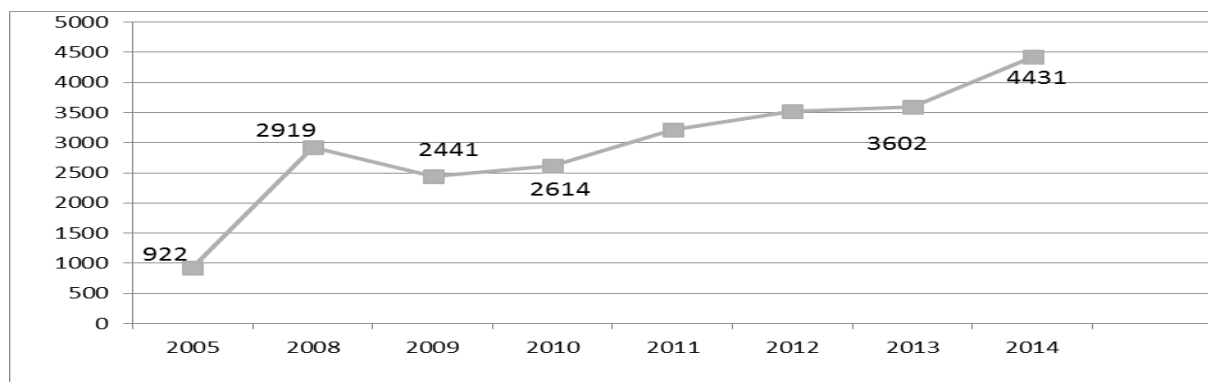
Georgia, following Ukraine and Moldova, the former Soviet republics, took the real path of the EU-integration. Despite the fact that the main problem of Georgia is an enormously growing negative trade balance (Abesadze, N., 2014; Abesadze, O., 2015b), the trade relations of Georgia with the EU countries have become quite intense recently. However, the EU requires from its potential members to meet certain criteria known as Convergent Criteria. Under Maastricht Treaty, the countries wishing to affiliate with the European Union must meet the following conditions: (Silagadze, 2014):

- 1 The GDP per capita must be 10-12 thousand USD.
- 2 The rate of unemployment must not exceed 10%.
- 3 The rate of inflation must be fixed as a single digit.
- 4 The foreign debt of the country must not exceed 60% of its GDP.
- 5 The state budget deficit must not exceed 3% of GDP.

Let us see if Georgia can meet these requirements and let us analyze the evaluation of Georgia's expectations in respect of the above-listed indicators.

It is commonly known that the principal macroeconomic indicator showing the outcomes of the economic activity of a country is its gross domestic product, with its size per capita as one of the major classification marks of the country's rating. This mark determines the life in the country to a great extent and level of development of a country in general. The dynamics of GDP per capita of Georgia is shown in the graph below (Fig. 1).

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Source: National Statistics Office of Georgia, 2016

Figure 1. Dynamics of GDP per capita in Georgia (US Dollars)

It should be noted that the indicator of 2014 was calculated based on the preliminary data of the general population census of 2014. A 20% increase of GDP per capita in Georgia as compared to 2014 was the result of the reduced number of population of the country (it amounted to 3680,8 US Dollars).

It is true that a regular increase of GDP per capita is evident in Georgia, but Georgia is unlikely to approach this principal indicator under Maastricht Treaty and meet the first Convergent Criterion. As per the forecast of "Georgia 2020", the expected value of GDP per capita is 8000 USD, while the Maastricht Treaty sets this value at 10-12 thousand USD for the EU-integration purposes. As per the experts' opinion, Georgia can achieve this level without any increase in its foreign debt after 10 or 12 years. (Silagadze, 2014). To illustrate the case, we have identified the expected trends of GDP growth per capita and calculated the prognostic values with a linear function. After calculating the values of the parameters and inserting them in the equation, we gained the following linear equation: $y=2865,9+264,4t$, and used it to calculate the prognostic levels of the series and presented the results as a table (See Table 1).

Table 1. Forecast of GDP per capita in Georgia in 2015-2020 (US Dollars)

Year	2015	2016	2017	2018	2019	2020
Index						
GDP per capita, USD	4982	4453	5246.5	5511	5775.5	6040

Source: Author's own compilation based on the materials of National Statistics Office of Georgia, 2016

We calculated the prognostic values by considering the preliminary data of population census of 2014. After calculating the parameters based on the empirical data with linear equation: $y=2959,8+313t$, we calculated the prognostic values of GDP per capita in Georgia (See Table 2).

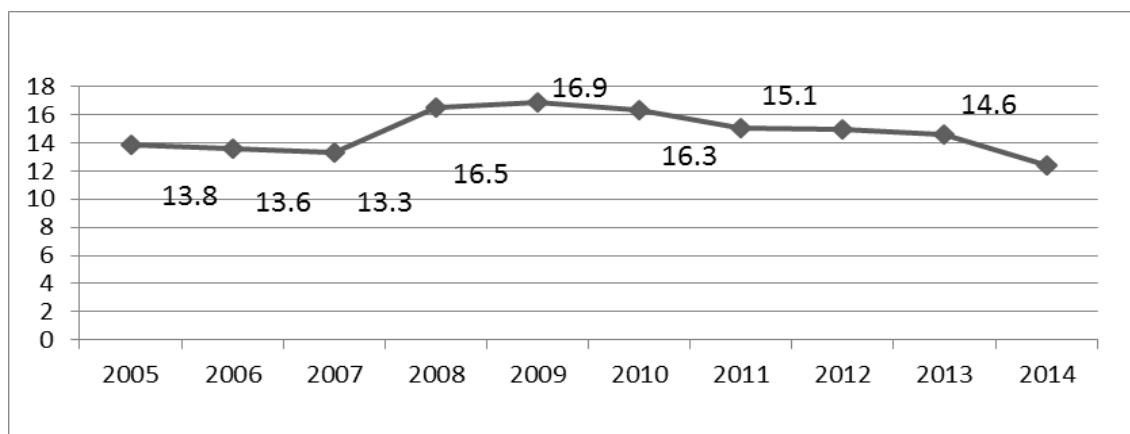
Table 2. Prognostic values of GDP per capita in Georgia

Year	2015	2016	2017	2018	2019	2020
Index						
GDP per capita, USD	4528.8	4842,6	5156,4	5470,2	5784.0	6097.8

Source: Author's own compilation based on the materials of National Statistics Office of Georgia, 2016

It is true that the latter indicator is higher, but the indicators in different years clearly show the country's failure to meet one of the requirements of Maastricht Treaty.

Another requirement for the EU-association is to maintain the rate of unemployment rate at no more than 10%. (Silagadze, Atanelishvili, 2014) Unemployment remains one of the most painful and unresolved problems for Georgia. The rate of unemployment in the country is still high amounting to 12,4% as per the latest data. As per the official statistics, the highest unemployment rate in recent years in Georgia was fixed in 2009 (16,9%). However, it started to decrease later and was 15,0% in 2012, 14,6% in 2013 and continued to fall. At present, a major proportion (approximately two-third) of the country's population is self-employed. It is a fact that the total number of unemployed and self-employed makes 70% of the labor-bodied population of the country.



Source: National Statistics Office of Georgia, 2016

Figure 2. Unemployment rate (%)

As per “Georgia 2020”, the rate of unemployment in 2020 will be approximately 12%. This means that unfortunately, Georgia will fail to meet this requirement for EU-integration, as well. (Silagadze, 2014) One of the major reasons for this is the failure of the economic reforms in the past years to yield desirable out-comes. The goals stated in the present strategic and program documents associated with the significant reduction of poverty and unemployment, remain partly unachieved. In order to overcome the problems and achieve the inclusive economic growth, it is necessary to improve the investment and business environment, support innovations and technologies, support export growth, development of infrastructure and maximum use of the country’s transit potential, development of the labor force oriented on the requirements of the labor market, development of the social security system and quality and easily available health system, mobilization of resources and development of financial mediation. In order to analyze the dynamic picture of the expected trends of unemployment given in details, we calculated its prognostic values with a linear function, and gained the following equation: $y=14,8-0.15t$. (Abesadze,O., 2015a)The results are given in a table (See Table 3).

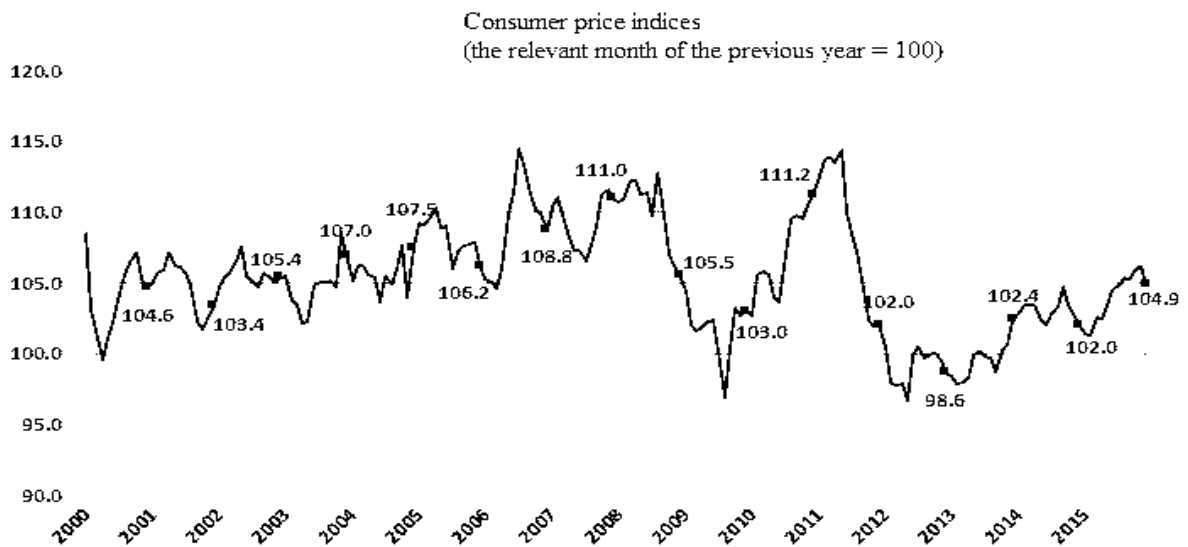
Table 3. Prognostic values of unemployment in Georgia in 2015-2020

Indicator \ Year	2015	2016	2017	2018	2019	2020
Unemployment rate, %	13.9	13.75	13.6	13.45	13.3	13.15

Source: Author’s own compilation based on the materials of National Statistics Office of Georgia, 2016

Despite the low value of unemployment rate in 2014, the prognostic values are not a bit optimistic, as the country is unlikely to approach a 10% limit by 2020.

The inflation dynamics is no less important. The strategy aims to achieve a 3% prognostic value of inflation by 2020. Reduction in inflation was the result of cheaper oil and foodstuff on the world market. As per the target prognosis, the inflation level will be maintained below 5% during 2015.

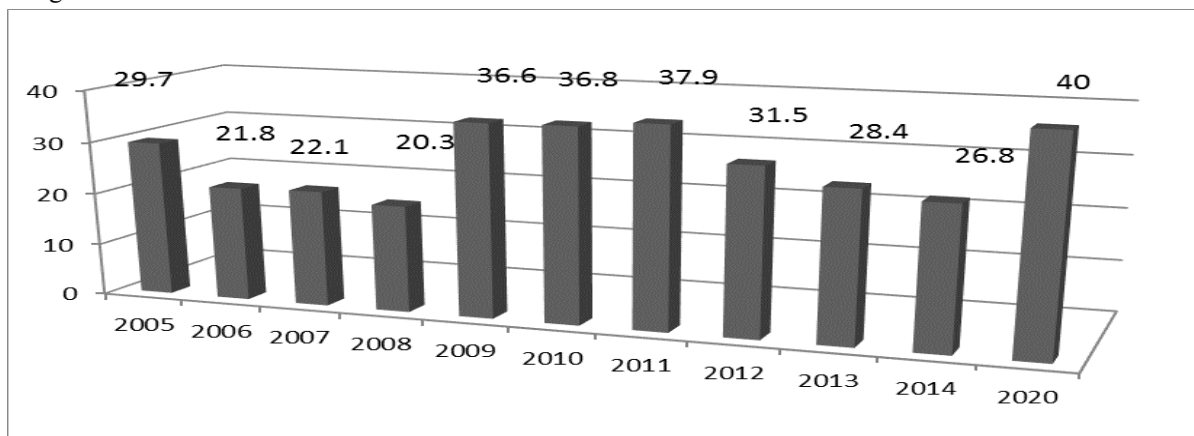


Source: National Statistics Office of Georgia, 2016

Figure 3. Consumer price indices (the relevant month of the previous year = 100)

Thus, the requirement about the inflation rate to be fixed as a single digit is realizable.

One of the principal terms for a country to affiliate with the EU is to maintain the specific percentage of the foreign debt in relation to GDP.



Source: National Statistics Office of Georgia, 2016

Figure 4. Share of foreign debt in gross domestic product of Georgia in 2005-2020, %

As per the data of the National Bank of Georgia, the share of the gross state debt in GDP is 35,5%, while the share of foreign debt is 26,8%.²³

As per “Georgia 2020”, the share of foreign debt in GDP of Georgia will be close to 40% by 2020 (Atanelishvili, 2014) This means that with this criterion, the country is likely to meet the requirement of Maastricht Treaty for the EU-integration. The last requirement for the EU-integration is that the state budget must not exceed 3% of GDP of the country. As for Georgia, this indicator is at the limit, as it is 3,2% as per GFSM. So, this criterion can also be met.

²³ <https://www.nbg.gov.ge/index.php?m=304>

Discussion

Professors Avtandil Silagadze and Tamar Atanelishvili offer their views about the criteria of Georgia's integration with the EU. They talk only about three parameters to be used by Georgia to meet the requirements for the EU-integration. However, as per our forecasts, we must anticipate a regular growth of the trade relations of Georgia with the EU what in terms of intense and thorough trade system, will become a factor supporting the strengthening and economic development of the country. Therefore, the indices of unemployment and GDP can be brought to positive levels what will improve the degree of Georgia's economic integration with the European Union.

Conclusions

The study showed that out of the requirements for the EU-integration, Georgia is likely to meet three of them: the inflation rate will be maintained as a single digit, the total budget deficit will not exceed 3% of GDP and the foreign debt of the country will not exceed 60% of GDP. As for other criteria, their major indices of the country fall back those of the EU countries.

We must hope that under the influence of both, internal and external factors, the accelerated rates of economic growth and expansion will be achieved creating a precondition for improving the intensity of the economic integration with the EU and getting close to the prognostic values of "Georgia 2020".

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*INCLUSIVE DEVELOPMENT AND HIGHER EDUCATION: BULGARIAN AND
LITHUANIAN CASE*

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Abstract

Purpose of the article Economic growth is due to successful alignment of education, scientific studies and business. The expected result of smart development is the increase of living standards and quality of life. Each country's sustainable development is determined by public, businesses and public institutions. The paper introduces the analysis which aims to estimate the changes in economic transformation and inequality changes in Bulgaria, Lithuania and the European Union Member States (EU-28) in the year 2005-2015. The country's economic development and poverty reduction is closely related to education, including higher education. The EU-28 is involved into the European Higher Education Area (EHEA), including Lithuania and Bulgaria. Therefore the main aim of the paper is to make a comparative analysis of Bulgaria's and Lithuania's economic development situation in the context of these changes. Higher education, as the most important socio-economic variable, diminishes economic inequality, increases incomes and reduces economic inequality. If the education level was lower, the economic situation in the country would be worse; the inequity would be more significant. Education determines the individual position of each person in the labour market, his income level, quality of life and its values. The analysis showed that higher education can make a significant influence both to Lithuanian and Bulgarian smart, sustainable and inclusive economic growth and to human capital development.

Methodology/methods The methods of research: analysis of scientific literature, statistical classification and comparison, logical comparative analysis and synthesis. For the analysis, data from Bulgarian and Lithuanian Departments of Statistics, World Bank Data, and EUROSTAT databases for the year 2005-2015 are used. Both absolute and relative amounts are compared. The method of base indicators comparison is applied, whereas the first year (e.g., year 2005) of the analyzed period is chosen as base year. The intenseness causes and the changes of the economic inequality level in countries are evaluated.

Scientific aim The aim of the study: to analyze the inequality, its reasons and relation with higher education in Bulgaria and Lithuania. Therefore the objectives of the paper are: to make the analysis of the changes of main macroeconomic indicators, the changes of economic inequality (income inequality, labour market inequality, Gini coefficient, risk-of-poverty rate or social exclusion) and the role of higher education in the country's economy.

Findings The analysis showed that higher education can make a significant influence both to Lithuanian and Bulgarian smart, sustainable and inclusive economic growth and to human capital development.

Conclusions Research shows different effects and the changes of economic indicators in Bulgaria and Lithuania, but in each country the global crisis reduced aggregate demand and demand for labour force, due to this the unemployment level has increased. The growth of unemployment causes the growth of discomfort index and increase of Gini index, which shows unequal distribution of income.

Keywords: economic development, economic inequality, economic equity, higher education, Lithuania, Bulgaria.

JEL Classification: O11, I23, I24

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Introduction

The purpose of this research is to analyze the state of economic development results and factors and to show economic inequality and higher education changes in Bulgaria and Lithuania in the context of the European Union member states (EU-28) in the year 2005-2015. At present, the higher education system both in Lithuania and Bulgaria is widely affected by integration and globalization. The creation of the European Higher Education Area (EHEA) involves all members of the EU-28, including Lithuania and Bulgaria, and is the main direction of further development of higher education sector. Research and recent economic success of many countries suggests strong links among higher education, knowledge, research and development expenditures (R&D), innovations and productivity, competitiveness and economic growth, which develops economic equality.

The future of the EU-28 depends on education, including higher education and training. These aspects are analyzed on micro, macro and global economy levels. The economic development, international competition and labour market require a more educated and qualified human capital, which is becoming increasingly globalized.

A large number of scientific research show that economic development of each country strongly depends on the achieved level of education, especially higher education. Due to this the article examines the role of higher education in Lithuania's and Bulgaria's economy.

The object of the paper is economic inequality and higher education.

The aim of the study: to analyze the inequality, its reasons and relation with higher education in Bulgaria and Lithuania. Therefore the objectives of the paper are: to make the analysis of the changes of main macroeconomic indicators, the changes of economic inequality (income inequality, labour market inequality, Gini coefficient, risk-of-poverty rate or social exclusion) and the role of higher education in the country's economy.

For the analysis, data from Bulgarian and Lithuanian Departments of Statistics, World Bank Data, and EUROSTAT databases for the year 2005-2015 are used. Both absolute and relative amounts are compared. The method of base indicators comparison is applied, whereas the first year (e.g., year 2005) of the analyzed period is chosen as base year. The intensity causes and the changes of the economic inequality level in countries are evaluated. The analysis of different indicators in Lithuania shows a tendency according to which Lithuania is getting closer to the EU average. The methods of research: analysis of scientific literature, statistical classification and comparison, logical comparative analysis and synthesis.

1 Factors of economic development

Both in Bulgaria and Lithuania, the key element of economic development is people. At present, the economic development, international competition and labour market require a more educated and qualified labour force, which is becoming increasingly globalized. Economic rivalry of Bulgaria and Lithuania are based on its human capital and low costs of labor. The hypothesis that human capital is a key indicator of productivity is widely discussed in economic literature. It is recognized that long term priorities of further development in these countries are: society based on knowledge, secure society and competitive economy. Competitiveness of these countries depends on their human capital and low costs of labor.

The main directions for economic development were noted in the Strategy of European Commission "A Strategy for Smart, Sustainable and Inclusive growth". The three priorities of the strategy are directly linked with the main challenges for economic development. Firstly, smart development must be based on knowledge and innovation. This would ensure the efficient use of resources, would help to protect health, the development of entrepreneurship; to promote wider use of the Internet; increase in digital literacy and the use of e-government. Significant role in the development of innovations and knowledge depends on education, including higher education, long-life learning. Secondly, sustainable development, which includes substantiated on economical use of resources and competitiveness. Thirdly, inclusive growth grounded on a high level of employment and a high level of social cohesion among regions and countries. High level of employment requires an investment in human capital and causes higher level of productivity and income both on individual and society levels. The growing level of education in the country causes greater social cohesion.

The question of low income and economic inequality of a country population is important for the examination of the role of separate economic sectors (agriculture, industry and services) and its efficiency in the country's economic transformation. Scientific literature widely characterizes the transformations taking place in the economy development. The structural transformations of the economy, S. Kuznets (1971), the Nobel Prize winner, named as one of the main factors of economic growth. In this way he analysed the pass from agriculture to non-agriculture activity, especially to the service sector. D.Ray (2010), explains the transformations or structural changes of economy using the concept of uneven growth, when not all sectors develop at the same rate. B. Galiniene et al. (2011) argues, that the problem of employment and unemployment is a key priority for

the modernization of economy in the EU-28, including Bulgaria and Lithuania. Employment in agriculture is decreasing and it is a natural process, leading to the modernization of economy and labor productivity growth. The growth of productivity causes the objective increase of living standards and quality of life and means that objectively decreases income disparities in the society, which causes a subjective decline of disparities of live ability of society.

The analysis of statistical data, according to Table 1, shows, that real GDP was contracted mostly in year 2009 in Lithuania, about -14.7 %, in Bulgaria -5.0% in the EU -4.3 % and in the EU euro area -4.4 %. The relative weight of agriculture in modern economies is 1-2 %. Bulgarian and Lithuanian agricultural sector accounts for 4-6 %, so economic transformation processes are taking place in the economy of Bulgaria and Lithuania. The relative weight of agricultural sector gradually diminishes in these countries and the share of the industrial and the service sectors gradually increases.

Table 1 The changes of main indicators of economy and economic activity in the year 2005-2014, in %

Indicator/Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
1. Real GDP growth rate (EG), %										
-Bulgaria	6.0	6.8	7.7	5.6	-4.2	0.1	1.6	0.2	1.3	1.6
-Lithuania	7.8	7.4	11.1	2.6	-14.8	1.3	6.0	3.8	3.5	3.0
-EU	2.1	3.3	3.1	0.5	-4.4	2.1	1.8	-0.4	0.2	1.4
-EU euro area	1.7	3.2	3.1	0.5	-4.5	2.1	1.6	-0.9	-0.3	0.9
2. Agriculture value added, % of GDP										
-Bulgaria	8.0	7.2	5.4	7.0	4.9	4.9	5.3	5.3	5.3	5.3
-Lithuania	4.8	4.3	3.9	3.7	2.8	3.3	3.9	4.4	4.0	3.4
-EU	1.7	1.6	1.6	1.6	1.4	1.6	1.6	1.6	1.6	1.6
-EU euro area	1.8	1.7	1.7	1.7	1.5	1.6	1.7	1.7	1.7	1.7
3. Industry value added, % of GDP										
-Bulgaria	29.0	29.8	30.5	29.5	30.5	27.5	29.6	29.5	27.6	27.2
-Lithuania	32.9	33.2	33.0	32.5	27.8	29.1	31.0	30.7	30.1	30.5
-EU	26.3	26.6	26.5	26.0	24.4	24.7	24.8	24.5	24.3	24.1
-EU euro area	26.6	26.9	26.9	26.3	24.7	25.1	25.1	24.8	24.5	24.3
4. Value added in services, % of GDP										
-Bulgaria	62.0	63.0	64.0	63.6	64.6	67.6	65.1	65.1	67.1	67.6
-Lithuania	62.3	62.5	63.2	63.8	69.4	67.6	65.1	64.8	66.0	66.0
-EU	71.9	71.7	71.9	72.4	74.2	73.7	73.6	73.9	74.1	74.3
-EU euro area	71.5	71.4	71.4	72.0	73.8	73.3	73.2	73.5	73.8	74.1

Source: The World Bank Group data, 2016

In scientific literature it is discussed which indicators are appropriate to be used to describe the development of coherence (Čiegis et al., 29-31). One of the methods to study this process is to analyze, using the World Bank Group data, the changes of such data as: gross national income per capita (GNIpc) calculated in USD, employment rate (E) of the population aged 15 + total in %, real economic growth and unemployment rate level of population aged 15-64 years old in %.

The ongoing contraction of economy from year 2009 in Bulgaria, Lithuania, in the EU and in the EU euro area has increased the unemployment levels. An unemployed person loses all or a share of disposable income, which can be used for consumption or saving. GNIpc, evaluated in purchase power parity (PPP), has been growing in all the analyzed countries. GNIpc growth rate slowed down in the after-crisis period in all the countries, as shown in Table 2.

Recession, reducing GDP, negatively affects the labour market. The biggest unemployment rate was in Lithuania and it had increased to 17.8 % in year 2010 and was significant in year 2011 – 15.3% and in year 2014 -11.3%, as shown in Table 2.

Unemployment rate in Bulgaria in the period of 2010-2012 had even increased from 10.2 % to 12.3 %. The biggest unemployment rate in Bulgaria was in year 2013 and it had increased to 12.9%. The labour market in the

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EU in year 2010 had suffered from a high unemployment level – 9.6 %, but this situation is continued and in year 2013 and unemployment level was 10.9 %.

The employment to population ratio, 15+, total in year 2014 increased only in Lithuania comparing with year 2009. The level of employment to population ratio, 15+, total in year 2014 both in Bulgaria and both in EU not have achieved the level of employment in year 2014.

It is important, that inflation, measured as GDP deflator, in Bulgaria and Lithuania had increased in the period of 2005-2008, after which it had been reduced to an acceptable level in 2014. In Lithuania inflation achieved 1.2 % level in year 2014; in Bulgaria and the EU it was considerably smaller – 0.4% and 0.9 in year 2014, respectively.

Table 2 The changes of income and labor market indicators in the year 2005-2014, in %

Indicator/Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
1.GNIpc (PPP), thou USD										
-Bulgaria	9.840	10780	11400	13230	13150	13460	13380	15160	15500	16260
Lithuania	14050	15790	17580	19060	17390	17970	20760	24550	24870	25490
-EU	26760	28926	30573	31733	30815	31555	32526	35461	35398	36293
2.Unemployment rate, %										
-Bulgaria	10.1	8.9	6.9	5.6	6.8	10.2	11.3	12.3	12.9	11.6
-Lithuania	8.3	5.6	4.3	5.8	13.7	17.8	15.3	13.2	11.8	11.3
-EU	8.9	8.2	7.1	6.9	8.9	9.6	9.6	10.5	10.9	10.2
3.Employment to population ratio, 15+, total, %.										
-Bulgaria	45.2	47.6	50.0	52.0	50.6	47.9	46.6	46.6	46.4	47.2
-Lithuania	51.9	52.9	54.1	53.8	50.3	48.3	50.7	52.6	53.8	54.3
-EU	51.7	52.4	53.1	53.4	52.2	51.8	51.8	51.5	51.3	51.6
3.Inflation rate (GDP deflator), %										
-Bulgaria	6.6	6.8	11.2	8.2	4.0	1.2	6.9	1.6	-0.7	0.4
-Lithuania	6.6	6.5	8.5	9.8	-3.7	2.8	5.4	2.6	1.3	1.2
-EU	2.6	3.0	3.0	3.2	1.8	1.0	1.7	1.6	1.3	0.9
4.Discomfort index, %										
-Bulgaria	16.7	15.7	18.1	13.7	11.0	11.4	18.3	13.9	12.2	12.0
-Lithuania	14.9	12.1	12.8	15.6	17.4	20.6	20.8	15.8	13.1	12.5
-EU	11.5	11.2	10.1	10.1	10.7	10.6	11.3	12.1	12.2	11.1

Source: The World Bank Group data, 2016

The discomfort index, as sum of inflation and unemployment levels, had increased after the financial crisis both in Bulgaria and both in Lithuania in year 2011, as shown in Table 2. In these countries this growth was mainly caused due to the growth of unemployment. The discomfort index in Bulgaria and Lithuania is higher than in the EU-28 in each year of the analyzed period.

2 Income differentiation and higher education comparison

The current EU strategy promotes social inclusion and seeks to reduce poverty, characterized by Gini index, as shown in Table 3.

Table 3 The changes of Gini index in the year 2005-2014, in %

Economic Index/Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
1.Gini index, %										
-Bulgaria	...	31.2	28.1	33.6	33.4	35.8	35.0	33.6	35.4	35.4
-Lithuania	36.3	35.0	33.8	34.0	35.5	36.9	33.0	32.0	34.6	35.0
-EU	30.6	30.2	30.6	30.7	30.4	30.5	30.8	30.4	30.5	30.9
2.Quantile income differentiation										

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-Bulgaria	...	5.1	7.0	6.5	5.9	5.9	6.5	6.1	6.6	6.8
-Lithuania	6.9	6.3	5.9	6.1	6.4	7.3	5.8	5.3	6.1	6.1
-EU	5.0	4.9	5.0	5.0	4.9	4.9	5.0	5.0	5.0	5.2

Source: Eurostat data, 2016

After the 2008 financial crisis and 2012 recession, the risk of poverty and exclusion has been constantly increasing as well as in Bulgaria and in Lithuania. The changes of poverty are described by the indicator risk of poverty of social exclusion, in %. The risk of poverty coefficient, as it is shown in Table 3, had increased both in Bulgaria and in Lithuania since 2008 and in 2010 was accordingly 35.8% and 36.9%. The risk of poverty in the EU-28 in 2011-2012 was less than in Bulgaria and Lithuania. The level of population inequality of income distribution shows that the ongoing economic and social policy is not efficient.

The scientific researches indicate that the most important socio-economic variable, influencing economic inequality, is education: if the education level was lower, the economic situation in the country would be worse, the inequity would be more significant. Education determines the individual position of each person in the labour market, his income level, life quality and its values.

The creation of the EHEA involves all members of the EU, including Bulgaria and Lithuania, and is the main direction of further development of the higher education sector. The EU-28 development expects a solid contribution through education, especially higher. In modern economy, work is characterized by technological, organizational and human resource flexibility. Nowadays, changes in economy and business emerge so fast, that higher education services must be able to use the new processes, equipment or technologies and to effect positively for cost reduction. Only 26% of the EU population aged 25-64 years old, have an university education, while in Australia - 37%, the US and Japan over 40%, in Canada - about 50% (Recent Developments, 2011, p.18). In the long-term, human capital, including education, can lead to innovation, productivity and economic development opportunities. Young people in the age group of 15-24, play a particularly important role in the labor market (Ciburiene, 2014). Developing human capital for education and training, four key objectives are raised for the period until year 2020 (Rethinking Education, 2012):

- 1 Carry out lifelong learning and mobility programs;
- 2 Improve the quality of education and efficiency;
- 3 Promote equity, social cohesion and citizenship;
- 4 Strengthen creativity and innovation, promote entrepreneurship education at all levels.

The accomplishment of education and training objectives in higher education until year 2020 is directly linked to the development of human capital during the study period, the development of comprehensive education. The education and training goals for year 2020 describe the specific criteria, covering not only the period of study (study termination, the need for continuous learning, learning or practice abroad), but also employment conditions. This shows the importance of human capital development and the most important problems in this process.

Education by sex in Bulgaria and Lithuania compared with the situation in the EU is shown in Table 4. The data show that the number of young men and women with higher education are different not only in Lithuania but also in the analyzed countries. In some countries, the difference is even higher than in Lithuania, for example, in Latvia 22.1 %, in Estonia 19.7 %, in Slovenia 17.9 % (Eurostat data, 2016). The slowest increase of youth (30-34 years of age) with higher education as shown in Table 4, in year 2006-2011 was in Bulgaria – increased by 2.0 %. In Lithuania it increased by 6.0 % and the EU – by 5.7 %. The EU-28 target that young people with higher education is not less than 40.0%.

Table 4 The share of youth (30-34 years old) with a higher education in year 2006-2011 in the ES-27, %

State/Year	Year 2006		Year 2011		difference between male and female	Change 2006-2011	Purpose for year 2020
	total	total	male	female			
-Bulgaria	25.3	27.3	21.3	34.0	12.7	2.0	36.0
-Lithuania	39.4	45.4	37.6	53.3	15.7	6.0	40.0
-EU	28.9	34.6	30.8	28.5	7.7	5.7	40.0

Source: Eurostat data, 2016; Republic of Bulgaria data, 2016; Statistical Office of Lithuania 2016

4 Discussion

Different theoretical approaches to the economic inequality and higher education in the society are based on culture, political, social values and economic development in the country.

It is important, that the analyze of structural changes of economic development, shows the significant problems of economics policy and shows the main aspects, which are necessary to be considered in decision making processes and in the development of economic policy of the country. In recent times the main question is: does higher education has prioritized role in economic development of the country? Is it rational solution to invest in the higher education seeking to enlarge own individual income?

Conclusion

The process of economy transformation is based, firstly, on the quantitative factor – the change of economic activity shares across broad economic sectors (agriculture manufacture and services), and secondly, on the changes of qualitative factors (labour force education level). This aspect of economic transformations effects agriculture and industry and service sectors. Research shows different effects and the changes of economic indicators in chosen countries, but in each country the global crisis reduced aggregate demand and demand for labour force, due to this the unemployment level has increased.

Unemployment level among analyzed countries increased mostly in Lithuania and in 2010 was 17.8 %, it was reduced in year 2011 – to 15.3%. In Bulgaria the unemployment rate increased until 12.9 in year 2013%.

The growth of unemployment causes the growth of discomfort index and increase of Gini index, which shows unequal distribution of income. The Gini index in year 2014 did not return to the pre crisis period, and was high both in Bulgaria (35.4%) and Lithuania (35.0%), when in the EU it was significantly less (30.9%). The biggest quintiles income differentiation in year 2014 was in Bulgaria and achieved 6.8, in Lithuania – 6.1 and the EU – 5.2.

In the long-term, human capital, including education, can lead to innovation, productivity and economic development opportunities. Competitiveness of these countries depends on their human capital and its productivity, therefore the “EU 2020 strategy” seeks to ensure that in year 2020 in the EU 40% will have higher education, this including Bulgarian and Lithuanian youth aged 30-34.

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IMPROVEMENT OF CUSTOMS STATISTICS IN GEORGIA

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Abstract

Purpose of the article Purpose of the present article is to identify drawbacks in the field of customs statistics of Georgia and to formulate concrete steps for their correction.

Methodology/methods The methods of induction, deduction, analysis, synthesis, statistical observation and grouping have been used in the research process.

Scientific aim The aim of the scientific work is to determine the principles for improving the statistical registration of commodity at the customs in Georgia.

Findings Countries of origin are not yet completely reflected in the cargo-customs declaration at the Georgian customs; the field „means of transport at the border“ in the cargo-customs declaration is not filled in; data on estimated market value of the means of transport in the databases of Service Agency of the Ministry of Internal Affairs of Georgia is not complete; detailed coding of imported vehicles is carried out incorrectly; the simplified customs declarations are not completely filled in with reference to countries, 11-digit item coding and value. In terms of registration, certain problems are caused by the fact that a sender and a country of final destination are not always filled out in the declaration. Problems exist in producing foreign trade price indices, the issue being that the information on foreign trade statistics is classified according to the Harmonized Commodity Description and Coding System while price indices are calculated according to the classification of types of economic activity on the 4-digit level; in filling in declarations there are frequent errors related to registration of commodity code, weight and additional units of measurement.

Conclusions Empirical data related to production of Foreign Trade Statistics are characterized with certain errors, as a part of foreign trade operations remains unregistered. It means that registered value of exports and imports does not fully correspond to the value of actual flows.

Keywords: statistics, customs, method, registration, problems.

Jel Classification: C1

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Introduction

Proper production of customs statistics has a great importance for government regulation of economic processes in the country. The customs statistics are in very close connection with the foreign trade statistics, which plays a major role in establishing effective external economic and customs policies of the country. In particular, monetary and fiscal policy of the country depends on the data of foreign trade balance and vice versa. For instance, the more the national currency appreciates, the more the imports increase, while the larger is the national currency depreciation, the higher is the increase in exports. In addition, the amount of foreign currency reserves should be in a certain proportion to the volume of imports, in order to maintain an effective monetary policy (Uridia, Rukhaia, 2009).

One of the main principles of Georgia's economic policy is liberal foreign trade, which implies simplified foreign trade regime and customs procedures, low import taxes and minimal non-tariff regulations. It has been achieved by the Georgian government through tariff policy, as well as through the reforms of technical regulations.

Currently Georgia is the beneficiary of the generalized system of preferences (GSP) of the following countries: European Union, the USA, Japan, Canada, Switzerland and Norway. The main essence of GSP is to set low base tariff rates on products imported from beneficiary countries, which simplifies entry of exports from developing countries into the developed markets (Abesadze, O. 2015b). In addition, according to the Georgian legislation, exports and re-exports from Georgia are exempt from taxes. Due to the fact that since 1 September, 1997 Georgia uses value-added tax by destination country, exports from Georgia are exempt from VAT. According to the Tax Code of Georgia, rates of value-added tax and excise tax are equal for local and imported products. (Terashvili, 2006).

According to the Law of Georgia on Licenses and Permits, non-tariff restrictions of any kind (licensing, quotas, prohibitions, etc.) are not envisaged in foreign trade, except for the cases when it is necessary for health, security and environment protection.

In the conditions of the above-mentioned liberal foreign trade policies, today when the goals of introducing advanced European practices and achieving European Integration represent Georgia's main priorities (Abesadze, N., 2014), the capacity building of national statistical system in accordance with international standards is especially urgent. However today, when European economic integration of Georgia is underway, problems of statistical registration in the customs become very obvious. Solutions to the above-mentioned problems create new challenges for the National Statistics Office (NSO, 2016).

Theoretical basis of the research represents the articles of Georgian and foreign scientist-economists concerning the above-mentioned topic. Among them are: B.Gabidzashvili, G. Gaganidze, N. Akhvlediani, E.Jgerenaia, G. Uridia, N. Terashvili, N. Aslamazishvili, N. Abesadze, L. Dzebisauri, O. Abesadze and others. Their articles reflect economic aspects of the ongoing processes at the customs, challenges of Georgia's customs statistics, problems, etc.

The purpose of the present article is to identify drawbacks in the field of customs statistics of Georgia and to formulate concrete steps for their correction.

Methodology/methods – in the research process the methods of induction, deduction, analysis, synthesis, statistical observation and grouping were used in order to acquire, process, analyse the empirical materials and draw reasoned conclusions. The errors of information support of customs statistics were revealed on the basis of current, periodic and one-time statistical observations. As a result of typological, structural and analytical grouping, the problems were identified.

Scientific aim - the aim of the scientific article is to improve the methodological basis for commodity registration as a result of revealed shortcomings in the Georgian customs system and, consequently, to determine the principles for improving statistical registration.

Errors in Customs Statistics

In terms of improving Customs Statistics and harmonization with the EU standards main problems of statistical registration currently faced by the National Statistics Office of Georgia are obvious.

First of all, it should be mentioned that the field of a country of origin is not appropriately filled in the customs declaration. In the foreign trade databases a trading country is mainly recorded, but not a country of origin. For example, in the database of June 2015, a country of origin is not recorded in 61% of declarations, while according to the new methodological recommendations of the UN, it is mandatory to register country of origin.

On the other hand, it is noteworthy that one of the problems of foreign trade registration is related to filling the field of “means of transport at the border” in the cargo-customs declaration. In regard to the UN recommendations, producing international merchandise trade statistics is necessary in line with the breakdown by means of transport. This information was available until 2011, but after establishing a time limit on filling the declaration, completion of this field became voluntary, which resulted in foreign trade statistics data by means of transport not being produced since 2011 (Abesadze, 2015a).

Third, in the databases of the Service Agency of the Ministry of Internal Affairs, imported vehicles are valued at approximate market values instead of exact ones; besides, there are cases of incorrect valuation of goods that are identified and corrected by the National Statistics Office of Georgia. It gives rise to discrepancies, as in the databases received from the Service Agency on a monthly basis approximate market values are recorded for imported, exported and re-exported motor-vehicles. This is the reason of differences between the databases of Geostat and the Service Agency of the Ministry of Internal Affairs.

As a continuation of this issue, there are examples of incorrectly assigned codes for imported means of transport in the database of the Service Agency. This is due to errors in coding of new and used vehicles, while in some declarations codes of goods are not recorded at all. Besides, in the databases of the Service Agency country codes are not always assigned for exports and re-exports (for example, from 2013 to 2015 this indicator decreased from 11.0% to 0.01%). Completion of this field is necessary for producing foreign trade statistics with the breakdown by countries.

It should be noted that in the databases of the Service Agency the variables such as importing country, import date and import price of vehicles in the case of direct re-export remain unknown, since import declarations are not filled altogether. It is important and necessary to record import country, date and value on declared vehicles with direct re-export regime for statistical purposes. Otherwise, there can be a situation when an exported vehicle is not recorded in the country’s imports. As a result, the number of exported vehicles may exceed the import volume that is incorrect in terms of statistics and leads to imbalances. Geostat corrects errors, but it is desirable to formalize detailed registration of relevant import flows at the primary source.

One of the most important problems is to complete the simplified customs declaration (form № 4) with reference to countries, 11-digit item codes and value. The simplified customs declaration (form № 4) does not provide records of a country of origin, commodity codes and vehicle registration at the border. Commodity description is not sufficiently detailed to make exact coding possible according to the commodity nomenclature. Commodity value is not always recorded in the declarations. The aim of using a simplified customs declaration is to reduce time spent on customs processing operations. It causes problems in terms of comprehensive registration of exports. It is primarily agricultural products that are exported in the neighboring countries using this method and thus their value is practically not recorded in the country’s exports.

In order to improve registration of foreign trade statistics it is important for certain operations to set an appropriate regime for moving between warehouses to avoid double counting (except for the transfer of ownership) (Gabidzashvili, Akhvlediani, 2002). The necessity of such a regime also arises when moving goods from one warehouse to another. This may include such good which were imported under the temporary regime but subsequently moved to a warehouse.

The registration of banknotes at the customs has to be regulated by the National Bank of Georgia. The relevant commodity code is envisaged in the Harmonized Commodity Description and Coding System. It is necessary to declare banknotes with the proper commodity code.

For the purposes of improving registration and foreign trade databases, it is necessary to identify a type of currency: national or foreign. Only based on this fact we can determine whether or not mentioned cargo should be recorded in trade statistics. The issue is that due to the request from the National Bank of Georgia that was agreed upon, the export and import of banknotes has become “top secret”, being declared as “special purpose cargo”.(Dzebisauri 2012)

In terms of registration certain problems are caused by the fact that in the Foreign Trade database some declarations do not include information on a sender and a final destination country (this is related to both warehouse and standard regimes). According to the legislation, it is mandatory to fill in this field, thus after with additional efforts made by the Revenue Service the quality of foreign trade databases will be significantly improved.

There are some drawbacks in registration of diplomatic goods (in certain cases humanitarian goods are declared with this code). According to the international methodology, while producing Foreign Trade Statistics diplomatic goods must be excluded and humanitarian goods need to be included, thus it is necessary to determine correctly these two operations.

As a rule, in case of goods processing, commodities have to be returned to the country from which the raw materials and half-finished products were imported/exported. This is not often indicated in the declarations: it may happen that goods (raw materials) imported from one country will be subsequently exported to another country. In line with the condition of actual transaction, it is possible that processed goods are delivered to a third country. According to the UN international methodology, the processing regime has to be included in Foreign Trade Statistics and the repair operations – in the Statistics of International Trade in Services (Aslamazishvili, 2003). At present the issue of splitting processing and repair operations is problematic.

In the case of export of vehicles a mismatch between exports and imports is caused by filling a direct re-export declaration during grace period, resulting in mentioned vehicles not being recorded in imports (while importing a vehicle a 60-day grace period is allowed before customs clearance). Such operations are systematically observed and adjusted by the Geostat, however, small gaps still remains.

Foreign trade has to be a real face (Jgerenaia, 2002). In statistical recording of export-import operations one problematic issue is incorrectly assigned regimes. When commodities are under import regime they obtain the status of Georgian products, which implies that export of such commodities is recorded as export instead of re-export. The problem of recording a temporary regime has to be solved, it should be improved by the customs to the extent possible; sometimes import and export of goods is recorded for the same company, which is re-export, but declarations show the export regime. Sometimes a declaration may contain the description “subject to return”, which means that the temporary regime should be assigned, but in certain cases this does not happen. The field for measurement units does not always contain data on additional units of measurement, as defined the national nomenclature in line with HS 2012, the examples of such units being “absolute alcohol” for spirituous beverages, “number of items” for cigarettes. For taxation purposes, namely for determining an excise tax on cigarettes and alcoholic beverages, the customs registers cigarettes only in packs, and beverages – only in liters. Through the automated system of the custom database “ASYCUDA” the taxable amount is calculated automatically.

The special cargo-customs declarations contained the information to be written in an introduction, which had not been reflected in international merchandise trade statistics till 2015. The mentioned declarations were established only in the time of import operations by Georgian Post. Apart from the fact, that the mandatory parameters for producing international trade statistics were not completely reflected in the declarations, the solution of the problem was hindered by the failure to receive the information from the relevant source. The Revenue Service of the Ministry of Finance, which is one of the major sources for producing international merchandise trade statistics, also did not have an access to the above-mentioned information.

The special cargo-customs declaration is one of the most important problems and the essential error of statistical information and has to be noteworthy, was being recorded from 2011 to November 2014 in international trade statistics, in the part of imports. Georgian Post filled in the above-mentioned declarations in the respective years. Despite many requests and official demands, National Statistics Office could not get the relevant information from Georgian Post, which was crucial for producing high quality international merchandise trade statistics. Since the end of 2014 declaration function of above-mentioned commodities has been transferred to the Revenue Service. After that, this kind of products are declared on the basis of conventional cargo-custom declaration, it gives an opportunity to receive information about Foreign Trade for producing relevant statistics in line with international standards. In special cargo-custom declaration exists following drawbacks: commodities codes in many cases were incorrectly (product description was not in accordance with the classification codes) or detailed only on 4-digit level. On the bases of product description the correct coding of commodities was made on 11-digit level; In many cases importing countries were not recorded. Determination of countries was held in accordance with the currencies in which the operations were carried out. In 2015 special cargo-custom declaration was adopted and the National Statistics Office made the correction and processing of information as well as 2011-2014 update import data.

Problems exist in the case of producing foreign trade price indices. The point is that the information about foreign trade statistics is classified according to the Harmonized Commodity Description and Coding System (HS 2012), while price indices are calculated according to the classification of types of economic activity (NACE), which does not allow for the calculation of real growth in foreign trade.

Discussion

Today is very actual in Georgia Custom Statistics issues . The systematic improvement of register is underway, which leads the approximation with International standards.

Conclusion

While producing Foreign Trade Statistics empirical data are characterized by certain errors, as a part of foreign trade operations remains unregistered. It means that registered value of exports and imports does not fully correspond to the value of actual flows. In particular:

- In cargo-customs declarations the country of origin is not recorded completely; In the Foreign Trade statistics databases a trading country is mainly recorded but not a country of origin.
- The field “means of transport at the border” in customs declarations is not filled in appropriately. The reason is that since 2011 after time restrictions on filling the declaration have been established, filling the mentioned field became voluntary. This led to the Foreign Trade data not being produced with the breakdown by means of transport.
- In the database of the MIA Service Agency the exact market value of imported cars is not referenced. It gives rise to some discrepancies, because the databases contain approximate market value of imported, exported and re-exported vehicles.
- Coding of imported vehicles is carried out incorrectly; In the case of export and re-export country codes are not always assigned by the Service Agency. Filling above mentioned fields is necessary for producing Foreign Trade Statistics with the breakdown by countries.
- Filling a simplified customs declaration is carried out incompletely with regard to country, 11-digit level commodity code and commodity value fields;
- In terms of registration certain problems are caused by the fact that in the monthly database some declarations do not include information about sender and final destination country;
- The issues of declaration of banknotes should be regulated by the National Bank of Georgia;
- There are certain errors in declaration of diplomatic goods under appropriate codes.

Conclusion, in terms of drawbacks in import data existed in 2011- 2014 were caused by the fact that receiving data from the Georgian Post about special cargo-custom was problematic. It has been eradicated as the right to declare appropriate cargo consigned to the LEPL -Revenue Service under the Ministry of Finance.

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*GENERAL UNEMPLOYMENT DATA IN GEORGIA AND THE STATISTICAL
ANALYSIS*

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Abstract

Purpose of the article Analysis of Tendencies of Formation of Trends in accordance of years 2006-2014 based on profound analysis of features, level and dynamic and reasons caused unemployment.

Methodology/methods while studies were used methods of statistical observation and grouping. Out of the analysis methods the emphasis was placed on absolute and combination dimensions, average and variable indicators, the analysis showings of time lines.

Scientific aim of the Research in Georgia is exposure of reasons, exploration of active factors, searching ways for reduction of unemployment rate and stimulation of employment.

Findings Certainly the general picture of unemployment in 2014 was improved in Georgia, though the situation of unemployment has not changed. It should be noted economical activities of women are lower than in men. Level of economical activity of men increases with age and employment as well. Unemployment rate of urban area comparatively low as 4-4.5 times for rural population caused by large share of self-employed. As well economical activity in urban areas is lower (57.5%) than in rural areas (74.8%). It should be noted that in 2014 compared with 2013 unemployment rate was decreased either in women (1.9%), or in men (2.5%) and correspondingly composed 10.4% and 14%.

Conclusions Generally, situation in 2014 concerning unemployment has been improved. Economical activity and employment in rural areas compared with urban areas is higher and unemployment is 4-times lower. Economical activity of women compared with men is relatively low; the level of economical activity is increased with age and employment as well, unemployment decreases; indicators of differentiated unemployment under context of rural-urban areas, gender and age; in Georgia unemployment level of men is rather high compared with women; along with increase of age unemployment rate of Georgia decreases and achieves minimum in age over 65 and etc.

Keywords: statistics, methods, level, unemployment, employment

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Introduction

The problem of unemployment is one of the acutest problems in Georgia and as the results of different statistical, conjunctive or social surveys evidence, often ranks first among the most important social-economic or political problems the country and Georgian people face. (Abesadze, N., 2013a) Study of unemployment has a great practical value not only in respect of a country in general, but also in regional, gender, age and urban and rural respects to develop the expedient employment policy, as it is one of the major means to overcome poverty. (Paresashvili, 2015a) Overcoming of poverty and raising of living level in a modern world still remains the major problem since the most part of the population is below the poverty line. The underlying reason is unemployment and therefore the scarce revenues of the population. Hence promotion to employment for the population is of foremost importance for acceleration of economic development of any state in order to solve the social problems.

In Georgia unemployment is the most acute social economic problem, that is confirmed by various surveys held from time to time. Unemployment level is high either in towns or in rural areas as well. Studying gender issues of employment and correcting the policy aiming at guaranteeing the employment gender equality on its basis is one of the priorities of the present government of Georgia. (Abesadze, N., 2013b) However according to current official statistical data the unemployment level in Georgia has dropped, though not so much and currently shows 12,4%. The subject of research implemented in this article is the quantitative analysis on present condition of national labor market and the object of research are processes and events in the national labor market.

The goal of this article to make analysis of tendencies formed in Georgia in years 2006-2014 based on profound analysis over level and dynamics of features and the reasons causing unemployment.

The scientific aim of the research is to reveal reasons causing unemployment, scanning of factors acting over it and searching for ways to reduce this level and to promote employment.

The scientists note that job satisfaction is caused by several factors: the labor process itself, system of promotion, supervision, employees and other indicators having a certain role in the labor process. (Paresashvili, 2015b)

In conditions of modern globalization and integration the unemployment is considered as the most acute social-economic phenomenon which defines the specifics of development of each state. The unemployment problem is especially urgent for Georgia since the social and economic losses caused by unemployment are rather extensive. The unemployment is an impeding factor of development of any state and will be in future as well. Therefore in modern world the policy-makers efficiently combat unemployment and are trying to bring it to natural level (5%-7%).

While study process were used the methods of statistic supervision and grouping. (Abesadze, N., 2013a) Out of analyzing methods were emphasized the absolute and relative dimensions, various average indicators, the time series of the rates of analysis

1 Statistical characteristics of unemployment

According to official data of national statistic service unemployment index dropped in comparison of past years and is fixed as 12,4%, though the official rates can't reflect the real facts. Despite this fact based on this data is evident that such data don't display rather satisfactory picture concerning unemployment.

Unlike EU States where unemployment is concentrated among non-educated people, in Georgia is a paradoxical situation. According to various studies more than 80% out of unemployed people involves people with comprehensive or higher education. Labor force is not used, so it can't contribute to the state economics. In the labor market there is disconformities between necessary and supply skills. In a sphere of higher education the main challenge of labor market is not taken into consideration in the structure of preparative specialties and in conformity of quality of preparation. And this is one of the hindering factors for doing business.

As a result of analysis over labor market were revealed important issues. First of all should be noted widespread census of population held in November, 2014 and its results (Paresashvili, 2015a). Reduction of number of population compared with year – 2002, especially among young people causing decrease of workforce. Within this period economically active population decreased more than 100 thousand times. The census held in the last year presents negative picture and in the future outlook there envisaged.

By general overview the situation was improved in 2014 and unemployment came to a minimum in 2011. The reasons causing such situation may be considered the growth of employment and reduction of quantity of active population. In regard of employment the situation almost has not changed for recent years. Their majority are still presented by self-employed people. Despite the fact that the official unemployment is not vast, if we add

the part of economically inactive population which are not pensioners or disables and self-employed as well and which are considered to be self-employed in the sector of agriculture then the unemployment may achieve 40-50%. If we take into account that rather large part of hired persons are employed in a public sector, which don't create additional value, we may consider that employment is a serious problem.

Labor market and employment rate needs general overview from the side of Department of Statistics since really unemployed people living in rural areas who don't produce anything are recognized as employed. Those who are employed and are outside of work force their register is also in disarray. For instance – tutors, taxi-drivers and other self-employed persons. To fix their revenues is also difficult, what salary they have or what revenues they have got from self-employment actually. In this way “Sakstat” and Revenue service or/and cooperation with private structures would promote formation of the common insight and will support to elaboration and spread of more reliable and transparent data.

Official figures differ from the real data radically owing to the mechanism of calculation of active population, unemployed and employed which were recommended by the international organization of labor.

Economical activity and employment in rural areas are rather high than in cities, unemployment 4 times lower owing to the fact that much more opportunities of self – employment in rural areas agriculture that is not possible for urban population.

In gender context review this picture is quite different. Economical activity of women compared with men is lower, employment is higher and unemployment rate is low each year in comparison with men. Unemployment in both, men and women became equal in 2008 owing to the period of crisis, employment was reduced in women in percents. Generally, economical activity of women being in working lags behind the level of activity of men.

To review the workforce by the age approach is also interesting. Together with aging the level of economical activity and employment increased and unemployment decreased, the maximum rate is achieved in a period of 40-54 years. Further this index is decreased with unemployment. Comparatively low economic activity during young age in some cases is due to have no desire to be employed. Young person of 15-19 years has no working experience. Therefore they do not agree to work with low salary or when the ability and education don't coincide with vacancies existed in the market, so-called structural unemployment (National Statistics Office of Georgia, 2015).

In order to correct the situation in the labor market it is necessary to provide more precise statistical data. For implementation of the analysis on demand-supply of working force the skills are necessary which kind of specialists are required and what is the real state of affairs from the point of inner and outer migration, how appropriately is informed unemployed about training programs (Tuxashvili, 2008). Therefore more statistical information is required from “Sakstat”/ Statistic Department, which provides the real picture of unemployment rate in the country. Information about migration is received from Ministry of Internal Affairs and Ministry of Foreign Affairs. Ministry of Education and Science on qualification level of education and Ministry of Labor how many people are able to work and what situation is in the market in context of delivery – demand.

In order to understand unemployment situation as any other social-economic phenomenon is necessary not only description of its properties but also qualitative evaluation which may be implemented by the system of appropriate rates. One of the main showings of unemployment is represented by the level of unemployment which displays officially registered unemployed specific weight among able population.

In fall. 2014 the widespread census of population of Georgia significantly changed officially existed data on population, its age structure and urban distribution. As of November 5, 2014 the population of Georgia was 3 729 635 without occupied territories that is less by 14,7% (641 900) that data of census implemented in 2002 (4 371 535). As well, distribution of peoples have been changed under context of urban-rural population. As a result of census it was revealed that the quantity of urban population is 2 140 126 (less by 6,3% compared with former census and rural population is 1 589 509 (less by 23,8% compared with former census). Therefore the share of urban population within whole population increased and achieved 57,4% (Lobjanidze, 2006).

The mentioned data radically changed the picture existed officially and influenced political, economic, social, educational and all other significant factors which represent the premise of development of the state. The significant economic issues should be reviewed including the labor market in which are actually represented citizens less in thousands; the economic potential of the state has been diminished. Correspondingly the economic potential of the state reduced since number of potential employees of the market who should create goods and increase GDP have been decreased. The percentage share of working population, employed and unemployed in regard of a whole population has also increased.

In 2014 economically active persons composed 1 991 100 over age 15, in population of 3 080 400, more by 64.6%. More than 87,6% from active population was considered to be employed and among the persons over age 15 – 56,6 % were considered as unemployed, correspondingly 12.4%- and 43.4%..

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Manpower replacement ratio composed 210.8‰, a pension charge ratio achieved 226.3‰. The common charge ratio in a whole 437.1‰. These indicators reflect negative picture either in present time or in future perspective. Manpower replacement is not complete since a pension capacity ratio exceeds the future workforce. The common capacity ratio is rather high when today the citizen of working age, not only employed has to keep 43.7% of half of population from their taxation, which should be used in various social programs and less financial recourses are remained for arrangement of other problems standing before the state. It should be noted that the level of unemployment of Georgia is one of the highest in comparison with other former soviet states.

Table 1. The Level and Dynamics of Unemployment in Georgia

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014
Economically active population (working force), thousand persons	2021.8	1965.3	1917.8	1991.8	1944.9	1959.3	2029.1	2003.9	1991.1
Employed, thousand persons	1747.3	1704.3	1601.9	1656.1	1628.1	1664.2	1724.0	1712.1	1745.2
Unemployed, thousand persons	247.5	261.0	315.8	335.6	316.9	295.1	305.1	291.8	246.0
Unemployment level in percentage	13,6	13,3	16.5	16.9	16.3	15.1	15.0	14.6	12,4

Source: National Statistics Office of Georgia, 2016

As indicators show in Georgia traditionally larger portion of employed persons include self employed. If we take into account that In Georgia the self-employed persons are distinguished by low productivity and non-complete employment the real picture becomes more staggering. Georgia is in the first place in post soviet space by share of self-employed persons.

In 2006-2014 in Georgia the level of unemployment was rather high and fluctuated between 12-16%. This indicator raised especially in year 2008 and from the fixed rate 13,3% achieved 16,5% - that may be considered as result of Russia – Georgia war and the financial crisis started in October throughout the world. In 2014 the level of unemployment dropped compared with year 2013 and achieved 12.4% and while last period was fixed at the most low rate. The main reason of all above is increase of employed persons by 33 100 persons and reduction of economically active citizens by 12 800 persons.

If we take urban and rural indicators of the unemployment level, the interesting picture will be evident by 4-4.5-lower in rural population that is caused by high share of self-employed persons. We may consider that the reason of so sharp difference among unemployed levels is a low level of activation in a city (57.5%) in comparison with villagers (74.8%). In rural areas are more chances to be employed since majority of those living there have agricultural facilities with land-plots, they take care after poultry and cattle in their yards. Correspondingly they are more active in economic way and therefore they are capable to be in conformity with employment standards stated by International Labor Organization and are considered as employed despite various opinions of population.

Based on official data it may be considered as if in Georgia's regions the problem of unemployment is not so acute as in the cities. Unemployment in rural areas is mainly reduced by inefficient self-employment in rural facilities.

It may be noted that the negative correlation exists between poverty level and unemployment in the regions of Georgia: the lower the level of employment the higher is the share of families living below the poverty line. Out of hired persons 31,3% are living in rural areas. In other words the quantity of people hired in villages lags behind the city rate by 3,4 times.

Reviewing employed and unemployed persons by gender it should be noted that in 2014 compared with year 2013 unemployment level was reduced either in women (1.9%), or in men (2.5%) and correspondingly achieved 10.4% (minimum of 14 years) and 14% (minimum of 7 years).

Traditionally the level of unemployment in men is higher compared with women. The main reason is that the majority of unemployed women are involved in household and is attributed to the category of inactive population. In 2014 the inactivity level in women (42.9%) was twice higher than in men (22.6%) rate. By qualitative shape in women activity rate 920 thousand is lower as inactivity (1071 thousand), as to employment (921 thousand) rate in men. The general employment indicator in women and in men achieved a maximum in the last 9 years and the equal share of employed persons (60%) fell on self-employed population.

By review in the context of age unemployment we find that along with growth of age unemployment rate is reduced and achieves minimal rate over age 65 years. The main reason is that in this age group the most part of population doesn't look for employment, the level of economic activity is low that approaches the rate of employed people. This group represents the pension age and correspondingly is attributed to inactive part of population. The lower is the level of economic activity in population of 15-19 age group, though in this case unemployment level is high and exceeds third part of active population. It should be noted that in 2014 compared with the former year unemployment level was reduced in all age groups of highest reduction (11.3%) in the group of age 15-19 was fixed. This two age groups are distinguished by large share (more than 80%) of self-employed persons owing to lower interest of employers towards this group owing to shortage of theoretical and practical skills in youth and less working ability and efficiency than in aged persons.

The most active population in economic order are people of age 35-55, when they have the highest level of skills and experience with of responsibility towards their families. Unemployment rate coincides with common rate of the state and creates the real picture in labor market.

High unemployment rate in the state is one of the factors contributing to increase of crime. The number of crimes registered in special authorities increased in certain spheres. Furthermore one of the most significant are especially grave crimes perpetrated for recent years, their quantity increased. And according to the information concerning their status (which frequently were not fixed) we suppose that most of them were done by unemployed persons. The most part of unemployed persons are involved in illegal activities. Social sides of unemployment are not of less importance than economic side.

Unemployment leaves the negative trace on the health state of population, furthermore there increased the quantity of deaths owing to diseases of the system of blood circulation, system of digestion, respiratory system that together with other reasons are connected with other unhealthy phenomenon, inadequate nutrition, nervous tension, insomnia and etc. (Tugushi, Paresashvili, 2007).

Consideration on negative results of unemployment may be at least of its duration. In Georgia an able-bodied citizen who wants to work may not find employment according to its profession during many years. A long period of unemployment reduces his professional skills, such person needs rather long period for adaptation to work. The situation becomes more complicated when at the enterprise starts innovative processes and as a result of scientific-technical progress the technology of production had been changed. In such case his/her qualification may be found as old requiring training. These are connected with large financial expenses.

Certainly, the negative social-economic results of unemployment are evident and they are evaluated by specialists mainly in negative aspect, however as any phenomenon the unemployment has the certain positive aspects together with negative aspects as well of the point of view of influence in the market (Tsartsidze, 2013). In particular existence of unemployment in certain way determines: permanent retention of working force; competition between employed persons; labor productivity and stimulation of intensity; raising of social importance of labor and its role in a society; growth of the social status of an employed person. As we have seen the problems caused by unemployment are not desirable, therefore reduction of unemployment to minimum as the social-economic phenomenon associated with market economy is necessary from the point of reduction of negative social-economic results.

2 Discussion

In Georgia the unemployment problems are debatable since by the opinion of experts data of statistics national service precisely reflects the real unemployment rate; the point is that the share of self-employed persons is rather large and totally this situation brings unemployment to the lower rate. However it should be taken into account that self-employed persons are quite active in economic way, therefore they fall into standards of employment stated by Labor International Organization and are considered as employed.

Conclusion

As a result of analysis on labor market of Georgia the important tendencies have been revealed. As a result of census held in November, 2014 the quantity of population compared with 2002 has declined, especially young people that causes reduction of working force. While this period the economically active population was also decreased. Unfortunately in the nearest outlook are looming the prospects of more reductions.

In the context of overall picture of unemployment the situation of year 2014 has been improved and comes to a minimum while 11 years. It was caused owing to increase of employment and reduction of quantity of economically active population. In the context of employment the overall picture has not been changed in recent years. Their majority mainly consists from self-employed. Despite the fact that an official unemployment is not vast, if we add to unemployed persons the part of the economically inactive population which are not pensioners

and disable, and self-employed as well who are considered as employed in rural facilities then the unemployment rate may compose 40-50%. As well if we take into account that sufficient part of employed persons are employed in public sector which doesn't create additional value we may attribute employment as a serious problem.

Economic activity and employment in rural areas are rather high compared with towns and unemployment is 4-times lower. The foremost reason of it is that in rural facilities they are self-employed more easily because of opportunities of agricultural lands, urban population has no such opportunities (Torja, 2006).

While review of all of these in gender aspect the picture is quite different, Traditionally the level of unemployment in men is higher compared with women. The main reason is that majority of unemployed women are involved in household and are attributed to the category of inactive population. Unemployment rate in both genders in 2008 became equal owing to economic crisis and women employment was decreased in percentage in comparison with men. Generally, economic activity of women of working age falls behind economic activity of men. In the context of reimbursements there are sharp differences too. The salaries of men are significantly higher than the salaries of women and such difference has retained yearly. The main reason of all above may be considered the traditional opinion that men should represent "breadwinner" of the family and women should be engaged in family affairs, looking after children and making household.

Review of working force with age aspect is also interesting. Along with aging the level of economic activity and employment is increased and unemployment is decreased achieving the maximum in age of 40-54, furthermore the indicators are changed along with unemployment. Comparatively low economic activity while young period in some cases is due to absence of desire to be employed: while study in age of 15-19 they are very young, without working experience, and have no desire to work with low salaries; there are no many opportunities of employment, when the skills and education of an unemployed person don't coincide with requirements of vacancies existed in the market; so-called structural unemployment.

The Studies Found, that: By review in the context of age unemployment we find that along with growth of age unemployment rate is reduced and achieves minimal rate over age 65 years. The main reason is that in this age group the most part of population doesn't look for employment, the level of economic activity is low.

It should be noted that in 2014 an unemployment level compared with former year has declined in any age groups, however especially in 25-34 age group evidently owing to interests and necessity for theoretical and practical knowledge and experience.

The labor market and unemployment indicator need general overview from the side Statistics national service since really unemployed people who live in rural areas and produce almost nothing and have lowest revenues are declared as employed. The registration is also irregular for those who are employed and are outside of working force for instance – tutors, taxi-drivers and salesmen and other kind of self-employed people. To fix their revenues is also difficult, what kind of reimbursement they have or how much revenues they receive. In this context is necessary to formulate the common view of statistical authorities, revenue service or to maintain cooperation with private structures that will promote elaboration and spread of more reliable and transparent data.

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*CORRELATIONS OF ENVIRONMENT FRIENDLY AND SUSTAINABILITY
BUSINESS ORIENTATION TO FINANCIAL RESULTS OF CZECH AND SWISS
PRODUCT INNOVATIVE COMPANIES*

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Abstract

Purpose of the article The research concentrates on finding correlations in between environmental friendly and sustainability approach of the companies and their financial performance indicators.

Methodology/methods For the research purposes the data from European company database Amadeus were used. Concretely the data sample set is covered by 50 companies from the Czech Republic and Switzerland. Environment friendly and sustainability oriented business approach of the selected companies are represented by calculated Environmental Index. Standard financial ratios ROE, ROA and EBIT within last 5 fiscal years of the selected companies were used for evaluation of their financial performance. Correlations of Environmental Index and financial ratios were statistically tested in SPSS programme by using Spearman's correlation coefficient and presented in graphical, verbal and numeric form.

Scientific aim The research objective is to find the most relevant financial performance on the basis of correlation in between environment friendly sustainable business orientation measured by Company Environmental Index and financial results of selected companies.

Findings The research shows that the return of asset and return of equity indexes do not correlate with the environmental index. On contrary the financial indicator revenue can be seen as the important factor for developing environmental friendly and sustainable business. On the basis of the results it is possible to conclude that there is a slight difference between Czech and Swiss companies as the strength of Spearman's coefficient of Swiss companies is close to medium correlation dependence whilst the coefficient of Czech companies is closer to low correlation dependence.

Conclusions Research findings show results in accordance with other worldwide research focused on impact of company environmental and sustainability business approach to their economical performance. Typically there is no measurable influence in short term period but some positive correlations are proven in mid. to long term perspective.

Keywords: environmental friendly business, sustainability, financial performance, Czech and Swiss companies

JEL Classification: M31, M21

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Introduction

Due to high and growing public and customer pressure, certain level of sustainability and environmental orientation activity became standard for many of the companies worldwide. On the other hand impression out of the approach of Czech companies is showing less activities in the field of sustainability and environmental orientation. Thus it was decided to make this comparative research and compare level of sustainability and environmental orientation activities of Czech companies comparing to Swiss benchmark.

Sustainable development, although a widely used phrase and idea, has many different meanings and therefore provokes many different responses. In broad terms, the concept of sustainable development is an attempt to combine growing concerns about a range of environmental issues with socio-economic issues Hopwood, Mellor and O'Brien (2005).

Orientation on Sustainable development starts back in 1980s when, in 1983, the World Commission on Environment and Development (WCED) was created. In 1984, it was constituted as an independent body by the United Nations General Assembly. WCED was asked to formulate "A global agenda for change" UNCED (2012).

It was clear already at that time that direct relation between economic development and environment is key to keep sustainable development of the human society.

More and more consumers in the world are thinking of social and environmental consequences of the consumer lifestyle Sharachchandra (1991). This lead to stronger consumer movements that is no more only visible on consumer markets but also on business to business (B-2-B) markets Garbie (2013). It creates higher pressure on the companies to increase their sustainability and environmental oriented activities including proper communication towards stakeholders Steurer, Langer, Konrad, & Martinuzzi (2005). Related marketing communication with stakeholders is called Sustainable marketing or in some cases Green Marketing as Ottman (1994).

During the last two decades a lot of companies started to report the information of environmental sustainability. In 2013 more than 6,000 companies were issuing environmental and social reports Ioannou and Serafeim (2012). This positive trends is both given by voluntary initiatives of the companies and the existence of government and local municipalities regulations.

Several literature sources provide evidence, that many corporations had to focus on their environmental behaviour because of government environmental regulations Scorse and Schlenker (2012) or Benneer and Olmstead (2008). And many other studies provide the evidence that government disclosure programs have pushed corporations to improve their environmental performance - Scorse and Schlenker (2012), food and water safety Benneer and Olmstead (2008).

There is also often used term Green Marketing. It was first in late 1970s and one of the first books on green marketing was entitled "Ecological Marketing" in Henion & Kinnear (1976).

The main objective of this area of marketing is to reach a customer with environmentally friendly attitude. Therefore, many companies use green marketing to improve perception of their brands by their customers.

During the 1980s, new tools such as life-cycle assessment were invented. This tool allowed ecological considerations to be implemented into business decisions making process in Belz & Peattie (2009). The life cycle assessment model identifies the principal kinds of environmental impact throughout the life cycle of a product. This model was developed according to ISO 14040 and the cardinal target of this model is to define energy and environmental profile of the final products. The main reason to implement life cycle assessment derived from the need to use a precise process accounting and to highlight potential improvements which can be used to increase the environmental, economic and overall effectiveness of the processes within the organization. Moreover the goal was to quantify the environmental advantages on the basis of the use of recycled raw material - Intini & Kültz (2011).

Nevertheless, the use of green marketing in companies includes also some negative factors; primarily, the lack of customer confidence. Too many companies try to emphasize ecological factor in their marketing. In case of some companies such campaign is rather deceptive, creating distrust in customers. I.e., companies using green marketing should clearly demonstrate their compliance with ecological principles in their processes, outputs, distribution etc. in Ottmann (1994).

Everett Rogers (1995) in his book claims that the following five factors can determine whether a new ideas will be implemented pertaining the idealism of the shift towards green marketing: relative advantage, observability, trialability, compatibility and complexity.

Sustainable development and environment oriented communication and marketing activities are integrated part of Corporate Social Responsibility (CSR). To make CSR communication effective, it is important to

communicate properly with all shareholder groups. Companies are typically communicating CSR issues through annual reports or special CSR or Sustainability reports. These reports are more and more often based on international standards as per Kalousová (2007) or Černohorská and Putnová (2012).

These reports are also basis for the CSR and Sustainability activity measurement. Measurement is typically dependent on industry and also expectations of stakeholders as mentioned in Černohorská and Putnová (2012).

There are recommended and used many metrics to measure and compare sustainable business approach and environmental oriented activities of the firms. It is not easy to prepare simple and objective methodology to measure level of sustainability or environmental orientation of the company. Main reason is that all these activities do not have unified rules or regulations to be used and are based on voluntarily of the company - Searcy (2012).

There are also studies focused on relation between environmental and sustainability orientation of the companies on one side and their financial performance on the other. It was confirmed by Porter and van der Linde (1995) and also Reinhardt (1999) that pollution reduction leads to future costs savings by higher efficiency of the companies. Lot of additional empirical studies confirmed positive relationship between pollution reduction and financial gain.

In the finance literature, a number of studies have examined the market returns of portfolios of environmentally friendly firms. Cohen and colleagues (1995) used several measures of environmental performance derived from U.S. EPA databases to construct two industry-balanced portfolios of firms. They found no penalty for investing in the green portfolio and a positive return to green investing. Financial market analysts see environmental performance data as indicator of future capital market returns (Kiernan, 1998).

Some of the studies use regression models to evaluate the effect of changes in firm's pollution on changes in financial performance. Widely cited study of this approach is Hart and Ahuja (1996).

1 Research objectives

Based on the previous research and actual experience, following main research question was formulated:

Is there any correlation in between environmental friendly and sustainable approach of the companies on one side and their financial performance on the other?

2 Research methodology

Primary research was made through manual activity scanning of the selected companies. European company database Amadeus provided by Bureau van Dijk was used for the company selection in both countries under the same search criteria. Each particular sample set covered 50 companies.

First important step was to define proper search criteria for Amadeus database in order to get comparable sets of companies in both countries. After discussions with various experts following search strategy criteria were selected and used to search companies in Amadeus database. The goal for the selected search strategy was to get in each country comparable set of 50 companies that are strongly focused on their product innovations and with the highest revenues (turnover). Patent statistics are widely used as good metric and indicator of product innovation orientation of the company, thus patent statistic was used within the selected search strategy. Database searching was processed for each country in the following four steps:

- 1 All active companies and companies with unknown situation
- 2 Region/Country/region in country: Czech Republic / Switzerland
- 3 Number of patents: Top FourthQuartile
- 4 Operating revenue (Turnover) (th EUR): Last available year, Top 50

Based on this search strategy there were 50 companies processed in the Czech Republic, and Switzerland.

When it comes to branches of the selected companies, in the group of product innovation oriented companies the vast majority of the companies in both countries is focused on industrial production (70% in the Czech Republic and 75% in Switzerland). Machine building and engineering is mostly covered by Czech selected companies. Besides machine building and engineering also pharmaceutical and food industry is covered by Swiss selected companies.

Limitations of the search strategy are primarily in the fact that some of the companies do not publish their financial data. These limitations are influencing company search in both countries with similar intensity, so for the purpose of this research it can be ignored.

Second step was definition of proper set of metrics to be measured for each selected company. Based on the discussions with experts covering sustainable development and environmental oriented business activities, following respective metrics were selected.

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In order to compare financial performance and its development of wide range of firms of various size and from various industries, financial ratios were used as a key values for the comparison and correlation search. Ratios for last five fiscal years were included in the statistical evaluation in order to take into consideration the development of the financial performance of the companies.

Following three financial ratios were used for statistical evaluation:

ROE using P/L before tax (%)

This financial ratio is defined and calculated as follows:

ROE using P/L before tax = P/L before tax / Shareholders funds * 100

P/L before tax = Operating P/L (EBIT) + Financial P/L

Shareholders funds = Capital + Capital funds + P/L (previous years) + P/L (current year) + Reserves

ROA using P/L before tax (%)

This financial ratio is defined and calculated as follows:

ROA using P/L before tax = P/L before tax / Total assets * 100

Total assets = Fixed assets + Current assets

EBIT margin

This financial ratio is defined and calculated as follows:

EBIT margin = Operating P/L (EBIT) / Operating revenue (Turnover) * 100

Besides those three financial ratios there were following metrics used to measure sustainability and environment friendly orientation of the company. Selected metrics allow good comparison of sustainability and environmental oriented activities performance of different companies active in different industries. Following measures were selected for the presented comparative research:

ISO 14001 certification, EMAS certification or Global Reporting Initiative implementation, use of Ethical Code of Conduct in the company, regular publishing of Sustainability or CSR Report, presence of independent environmental or sustainability section on the company's web (Geerman EMAS Advisory Board, 2011).

There was Environmental Index calculated for each company as a Sum of the points gained by company in environmental oriented metrics. Its theoretical maximum that can be gained by a company is 19 points.

Table 1 Used metrics for sustainability, environmental orientation activities and financial results of the companies

Metric	Metric characteristics and scales
ISO 14001 certification	Is the particular company certified according to ISO14001?: Yes=1; No=0 Number of years from the first ISO14001 certification: 1 to 5 years = number of years; more than 5 years = 5 This value is limited to 5 in order not to discriminate younger companies. It also gives certain weight to this criteria.
EMAS certification or participation in GRI program	Is the particular company certified according to EMAS or is participating in GRI program?: Yes=1; No=0 Number of years from the first EMAS certification or GRI program participation: 1 to 5 years = number of years; more than 5 years = 5 This value is limited to 5 in order not to discriminate younger companies. It also gives certain weight to this criteria.
Sustainability / CSR report	Does particular company publishing sustainability or CSR report regularly (including respective chapter in annual report)?: Yes=3; No=0
Environmental or Sustainability section on the web	Does respective company's web include environmental or sustainability oriented section?: Yes=3; No=0
Code of Conduct	Does particular company have Code of Conduct?: Yes=1; No=0
ROE using P/L before tax	Value of the ratio for last 5 fiscal years recorded
ROA using P/L before tax	Value of the ratio for last 5 fiscal years recorded
EBIT margin	Value of the ratio for last 5 fiscal years recorded

Source: Authors

The environmental index was statistically processed together with the recorded financial ratios in order to find correlations. Following methods were used in order to search correlation in between environment friendly sustainable approach and financial results of the companies.

Shapiro–Wilk test is a test of normal data distribution. The test was published in 1965 by Samuel Sanford Shapiro and Martin Wilk. The Shapiro–Wilk test is possible to use for hypothesis testing. When the null hypothesis tests if a sample x_1, \dots, x_n came from a normally distributed population (Shapiro & Wilk, 1965).

The test formula is

$$W_n = \frac{\sum_{i=1}^{k_n} a_{n,i} (x_{(n-i+1)} - x_n)^2}{\sum_{i=1}^n (x_i - \bar{x})^2}$$

where:

n is the sample size

x_i is the i -th order statistics; i -th smallest number in the selection;

$a_{n,i}$ are tabulated constants dependent on sample size,

k_n is the number of constants $a_{n,i}$, also dependent on the sample size,

$k_n = n/2$ for odd numbers

$k_n = (n+1)/2$ for even numbers

\bar{x} is the arithmetic average of statistical selection.

The null-hypothesis says that the data are normally distributed. It means, if the p -value is less than the chosen α level, then the null hypothesis is rejected because it is obvious that that the tested data are not from a normally distributed population. On the contrary, if the p -value is greater than the chosen α level, then the null hypothesis is rejected.

Spearman's correlation coefficient is called after Charles Spearman. It is a nonparametric test of statistical dependence between two variables. The coefficient evaluates how close is relationship between two variables by using a monotonic function. If there are no repeated data values, a perfect Spearman correlation [+1 or -1] appears. It means that each of the variables is a perfect monotone function of the other.

Spearman's coefficient is appropriate for both continuous and discrete variables especially for ordinal variables (Corder, 2014).

The test formula is

$$\rho = 1 - \frac{6 \sum_i (p_i - q_i)^2}{n(n^2 - 1)}$$

where

n is the sample size

x_i and y_i are converted ranks

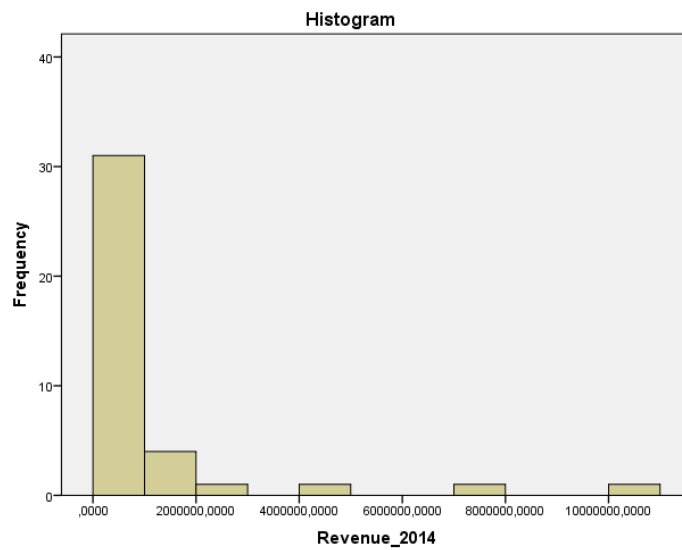
d_i is the difference between the ranks

$d_i = x_i - y_i$

3 Research results discussion

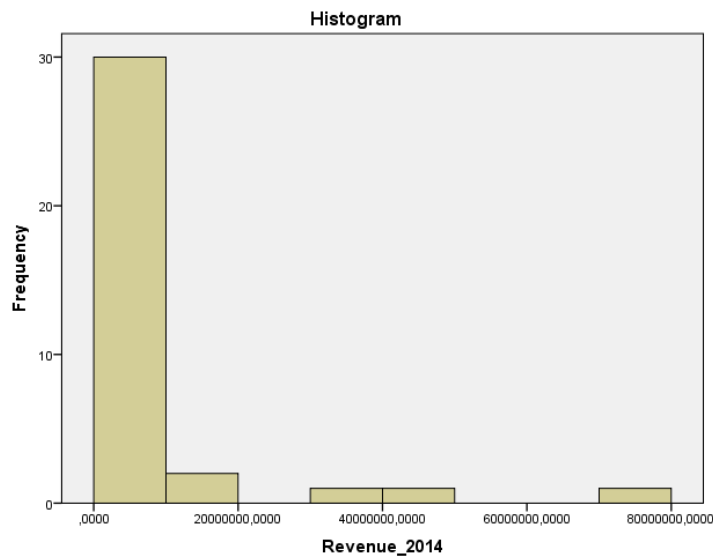
3.1 Statistical data processing

Values shown in the further text were calculated in MS Excel. Statistical tests were performed in SPSS to test research hypotheses. Histograms of Czech and Swiss companies are shown below. Histograms present the distribution of the selected variable – revenue.



Source: authors

Figure 1 Histogram for the Czech Republic – Revenue



Source: authors

Figure 2 Histogram for Switzerland - Revenue

Based on histograms, it is possible to conclude that the data did not come from a normal distribution. They do not describe Gaussian curve well. Thus Shapiro-Wilk tests of normality were performed to test following hypotheses:

- H0: Data come from normal distribution.
- H1: Data do not come from normal distribution.

Table 2 Shapiro-Wilk Test of Normality

Variables	Czech Companies			Swiss Companies		
	Statistic	N	Sig.	Statistic	N	Sig.
ROE_Average	,800	39	,000	,852	35	,000
ROA_Average	,931	39	,020	,955	35	,159
EBIT_Average	,822	39	,000	,963	35	,276
Revenue_2014	,449	39	,000	,987	35	,945
Environmental_Index	,933	39	,022	,467	35	,000

Source: Authors

Hypothesis H0 was rejected based on Shapiro-Wilk test of normal data distribution. P-value in both tests is lower than the chosen significance level: $\alpha = 0,05$. Therefore a nonparametric Spearman's correlation coefficient is used to evaluate the relationship between each financial indicator and environmental index. The strength of the correlation coefficient is defined as follows (Mimmack & Meyer, 2001):

- $\rho < 0,3$ very low degree of correlation dependence
- $0,3 \leq \rho < 0,5$ low degree of correlation dependence
- $0,5 \leq \rho < 0,7$ medium degree of correlation dependence
- $0,7 \leq \rho < 0,9$ high degree of correlation dependence
- $0,9 \leq \rho < 1$ very high degree of correlation dependencies

Table 3 Spearman's Correlation of Environmental index and financial indicators

Variables	Environmental index	ROE_Average	ROA_Average	EBIT_Average	Revenue_2014
Environmental index Switzerland	1,000	,176	,139	-,005	,348*
N (Switzerland)	39	39	39	39	39
Environmental index Czech Republic	1,000	,331	,229	,310	,461**
N (Czech Republic)	35	35	35	35	35

Correlation is significant at the 0.01 level (2-tailed).**

Correlation is significant at the 0.05 level (2-tailed).*

Source: Authors

From the table 3 it is possible to see on the basis of relevant data for Switzerland that the correlation coefficient between Environmental index and the financial indicators – ROE and Revenue are significant at the level $\alpha = 0,05$. More precisely there is a low correlation between ROE and Environmental index and almost medium correlation between Revenue and Environmental index as the value of the Spearman's coefficient is close to 0,5.

From the relevant for the Czech Republic only the correlation coefficient between Environmental index of and the financial indicator – Revenue is significant at the level $\alpha = 0,05$. It is possible to conclude that there is the low correlation between these two mentioned indicators.

Conclusion

This paper focuses on finding and describing correlations in between environment friendly sustainable business orientation and financial results of Czech and Swiss product innovative companies. Primary research was made through statistical processing of the following data – environment friendly and sustainability orientation of the companies described in Chlebovský, Schüller (2015) and financial data of the respective companies received out of European company database Amadeus provided by Bureau van Dijk (2015).

This paper showed that the return of asset and return of equity indexes do not correlate with the environmental index on the other hand the financial indicator revenue can be seen as the important factor for

developing environmental friendly and sustainable business both in the Czech Republic and Switzerland. Comparing the strength of Spearman's correlation coefficients between the Revenue and Environmental index it is possible to conclude that there is a slight difference between Czech and Swiss companies. The strength of Spearman's coefficient of Swiss companies is close to medium correlation dependence whilst the coefficient of Czech companies is closer to low correlation dependence.

In general companies should focus more on activities related to environmental and sustainability orientation. These changes can have a positive impact on the revenue increase as it is seen from Spearman's Correlation of Environmental index and financial indicator of the Czech and Switzerland companies with the highest operating revenues.

To improve environment and sustainability strategies companies should work harder on getting stricter certification such as Eco-Management and Audit Scheme and also implement voluntary activities like Global Reporting Initiative.

Acknowledgment

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*CERTIFICATION OF PERSONS: AN IMPORTANT CONFORMITY
ASSESSMENT PROCEDURE*

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Abstract

Purpose of the article The aim of the paper is to evaluate theoretical aspects of certification in order to assess the importance of conformity assessment procedures in ensuring compliance of professional competence in accordance with the requirements set out in the professional sphere, as well as to identify possible benefits that certification provides to both the organization and the individual.

Methodology/methods The methodology is based on comparison and analysis of literature and views published by various authors about the certification as a means of assessing a person's professional competence.

Scientific aim To promote scientific discussion and in-depth research of aspects related to certification of persons as regards assessment of their competence and continuous practice monitoring procedures in general, and specifically in the field of energy construction in order to avoid formal attestation of conformity, which can result in the threat to human health and life.

Findings Certification of persons is not only a way of confirming their professional competence, but also one of the most important qualification control mechanisms in the regulated sphere where the person has no rights to pursue their professional activities without an adequate proof of their competence. Certification also plays an important role in ensuring public and work safety in order to prevent circumstances in which untrained personnel's performance because of their professional incompetence or non-compliance to professional requirements may result in harm to the environment and public safety.

Conclusions Evaluation and analysis of the theoretical aspects of certification of persons provide a general notion of certification as the conformity assessment procedure which applies to any area to be certified and can serve as a basis for further studies of certification. Bodies operating certification of persons should evaluate not only the knowledge of the persons to be certified and their professional experience in the particular sphere, but also their ability to apply the acquired knowledge and skills in situations related to their professional activities, i.e. their competence. Competence evaluation is the biggest challenge at present. In order to describe the certification process of energy constructors and to identify its role in ensuring that the professional competence complies with the requirements set out in the field of energy, it is necessary to pursue in-depth studies.

Keywords: conformity assessment, certification, certification of persons, energy constructors, professional competence

JEL Classification: M15, M21

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Introduction

One of the most widely used conformity assessment procedures is certification, and the concept of certification is very closely linked to the concept of conformity assessment which includes the evaluation of a particular subject determining whether it meets the necessary requirements.

The aim of the paper is to evaluate theoretical aspects of certification in order to evaluate the importance of conformity assessment procedures in ensuring that professional competence complies with the requirements set out in the professional sphere, as well as to identify possible benefits that certification provides to the organization and the individual.

In order to promote common requirements for the certification of persons in all European countries thus ensuring the use of certificates in each of them, the European Standard ISO/IEC 17024:2013 "Conformity assessment. General requirements for bodies operating in certification of persons" has been developed. However, several norms of this Standard are ignored in the laws and regulations in the sphere of energy construction such as non-compliance with the requirement that the certificate shall acknowledge the construction specialists' professional competence and relevant experience rather than their academic education. In order to assess ways of improving procedures for the certification of persons in the future, especially in the field of energy construction where there are potential risks to human health and life, it is necessary to study and analyse the theoretical aspects of certification.

The energy sector is an essential precondition for sustainable growth of the national economy; therefore, the national energy policy is focused not only on the promotion of competition and use of energy resources, but also on increasing the security of energy supply. Since competition in energy construction and electric installation industry has become a major driving force, and more and more engineering and energy constructions are being built, much attention is paid to the compliance to appropriate standards on a daily basis, hence the need of highly qualified specialists.

1 Literature review of certification as a conformity assessment procedure

Conformity assessment plays a very important role in providing safe and harmless products and services, thus contributing not only to mutual recognition, but also to the reliability of the performed operations. Conformity assessment may vary in the level of difficulty and complexity, depending on the level of risk associated with the product (Delaney & Zande, 2000). In Latvia, R.Liepiņa has defined the concept of conformity assessment (2013) as follows: "Conformity assessment is the process by which the conformity assessment procedures are carried out to evaluate the object (product, process, etc.) compliance with the requirements".

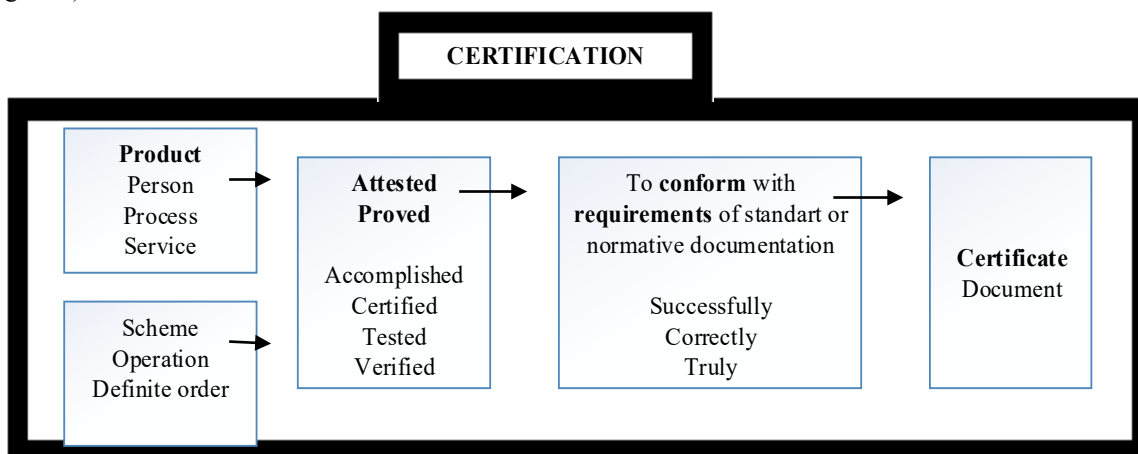
Longman Dictionary of Contemporary English (2014) defines certification as the "process of giving someone or something an official document that says that someone is allowed to do a certain job, that something is of good quality etc." By contrast, Business Dictionary (2015) expands the explanation of certification, indicating that it is "a formal procedure by which an accredited or authorized person or agency assesses and verifies (and attests in writing by issuing a certificate) the attributes, characteristics, quality, qualification, or status of individuals or organizations, goods or services, procedures or processes, or events or situations, in accordance with established requirements or standards". In the definition given by M.L.Lengnick-Hall (2012) certification is to be understood as "a process by which government or a private association assesses a person, facility, or program and states publicly that it meets specific standard".

A.Klauss (2002) in the definition of the concept of certification emphasizes the significance of activities performed by an independent third-party, pointing out that "certification is a third party's activity, which is independent from the producer and the consumer, attesting with a certain reliability that the product, process or service complies with the specified standard or other legislative document". Also V.Okrepilov (1998) explains the concept of certification as a "procedure, under which a third party provides a written assurance that the product, process or service meets certain requirements."

Whereas Y.Dimov (2010) defines the concept of certification as "a form realized by the certification bodies to assess the object compliance with the technical regulations, standards, legislative requirements or agreements". With the "form" the author understands the established procedures which certify the product or other object conformity in accordance with the relevant documents. Basically, the author's definition of "form" is the equivalent of the previous authors' terms "procedure" and "process", which envisage following a certain, pre-designed scheme. According to Dimov, certification is one of the ways of ensuring high product quality while improving both scientific and economic cooperation between countries on the basis of mutual trust.

The significant role of certification in ensuring product quality is also emphasized by E.Auriol (2015) who points out that “certification may be defined as a process whereby an unobservable quality level of some product is made known to the consumer through some labelling or stamping system, usually issued by a third independent party”. This is substantiated by the fact that during the certification process the trust to a particular product, which is so important for consumers, is turned into a research object and made an integral part of the product. In other words, certification is a process for transforming a credence attribute into a search attribute (Auriol, 2015).

The terms related to the concept of certification have been clearly displayed in an interrelation scheme made by R.Liepiņa et al. (2013) on the basis of the evaluation of different definitions of the concept of certification (Figure 1).



Source: Liepiņa *et al.*, 2013

Figure 1 The interrelation scheme of the terms related to the concept of certification

Liepiņa et al. define certification as “widely used in the conformity assessment procedure and its object may be a person, process or service as well as a certain action, scheme or arrangement” (Liepiņa et al., 2013).

The Latvian law “On Conformity Assessment” (1996) defines certification as “an independent third party’s action assuring that a product, process, service or person complies with the requirements stated in the normative act or standard”; at the same time, it also characterizes the main elements of the process, namely, the object, the parties involved in the process and its goal.

Upon analysing and evaluating the most common definitions of the concept of certification, we can conclude that certification is a conformity assessment procedure where the object can be not only a product, but also a person, process, service or certain action and under which an independent third party performs inspection of the object aiming to assess whether the object meets the necessary requirements and issuing a certificate as a proof of compliance.

2 Certification of persons as a means of confirming professional competence

Certification as a conformity assessment procedure can be attributed not only to a product, service, process or certain activity, but also to a person, in this case it involves an independent third party’s affirmation that the person’s professional competence complies with the requirements set out in the professional sphere. Here professional competence means that the person possesses the necessary knowledge, professional experience and understanding, as well as the ability to use this knowledge and experience in a specific activity (Briņķis, 2014). The meaning of competence is linked to an individual’s ability to learn, communicate and cooperate in a changing environment (Lapiņa *et al.*, 2015).

According to Z.Uhlir (2013) “today, with processes becoming more and more complex and resources and deadlines ever shorter, the basic success factor has become investment into human resources”. For an organization’s professional performance to be relevant and competitive, employees should be able to demonstrate a high level of professional competence in their sphere. The author points out that this professional competence is acknowledged by a certificate, nevertheless a certificate cannot guarantee an individual’s success, but it certainly is a significant indicator and tool for differentiation (Uhlir, 2013). Uhlir also believes that the process of certification of persons has an indirect impact on the educational process of the profession to be certified. It not only influences the quality improvement process which allows the person to demonstrate their

professional competence in their daily activities and tests their knowledge and skills, but also the professionalization process of the certified profession helping to provide performance that complies with professional standards.

Whereas M.L.Lengnick-Hall (2012) points out that “a goal of certification is to persuade professionals, their employers, and their customers, that those who are certified exhibit high levels of job performance. Certification may also protect the public (organizations and employees) from unqualified practitioners who by incompetence or failure to adhere to professional standards may do harm”.

D.J.Cohen (2012) agrees to the view that certified professionals may indeed perform better than non-certified professionals, and emphasizes that certified employees are characterized by the ability to apply their knowledge and experience into practice, demonstrating not only work performance of high quality and efficiency but also diagnosing and solving problems related to work performance. Whereas M.Powell (2014) opposes by arguing that certification of persons by itself does not guarantee a higher professional competence, thus a certificate of compliance with certain professional standards cannot be the decisive factor for the employee’s professional performance assessment. Powell stresses that certification should be based on the employee’s experience and performance, which nowadays is treated as increasingly less important; Powell believes that certification does not provide any results if the person lacks practical experience, i.e., it does not improve the efficiency or guarantee a better quality. A person with experience, an inquisitive mind, and a desire to accomplish something positive can often outperform a person with just a certification.

Also D.Guerrero (2012) emphasizes that “professional competences include a wide range of knowledge, procedures and attitudes combined, coordinated and integrated that the individual is responsible to knowing for professional practice”. It also incorporates the ethics, values and practice into this domain, which allow the individual to act effectively in professional situations. So it is the characteristics of the individual and their knowledge, skills, abilities, attitudes and values that can affect a competent performance depending on the context”. Thus Guerrero concludes that a person’s professional performance is very much dependent on interaction of all the above-mentioned components, i.e., on the way a person is able to apply their knowledge, skills, experience, values and personal character traits depending on the context of situation.

Since professional competence assessment is carried out by certification bodies, it is very important that it is performed in accordance with uniform requirements pursuant to the guidelines of the standard ISO/IEC 17024:2013 “Conformity assessment. General requirements for bodies operating certification of persons” (Figure 2).

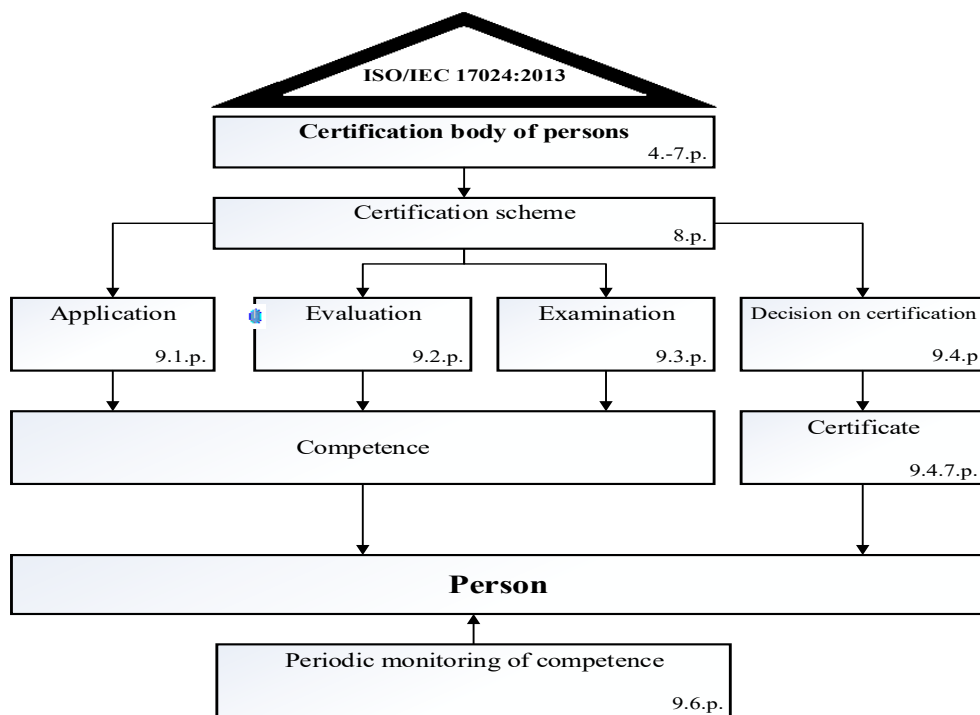


Figure 2 The interrelation scheme of certification process in accordance with the requirements of ISO/IEC 17024:2013

The interrelation scheme of the certification process shows the main activities carried out by the bodies operating certification of persons in order to verify the certified person's competence and consequently issuing a proof of compliance – a certificate. A specific certification scheme has to be prepared for each certification category, and all the necessary actions should be performed in accordance with the requirements of certification schemes, which include the criteria and methods to be used for each stage of the certification process. The task of the certification body is not only to ensure that all the stages related to the certification process – application, evaluation, examination and decision-making – have appropriate procedures developed in order to evaluate the certified persons' competence, i.e., the abilities, knowledge and skills by using objective assessment tools, but also to continuously validate the person's competence, including continuous practice monitoring.

We can conclude that certification of persons is one of the most common ways of evaluating professional competence that confirms that a person is able to perform their work according to the requirements set out in the professional activity sphere. When the certification bodies carry out certification of persons and assessment of their competence, a person's knowledge and experience gained in the specific field cannot be considered to be the sole assessment criteria – their competence has to be assessed in the context of personal characteristics and attitudes, as well as their ability to apply this knowledge and practical skills in situations related to professional activities. Evaluation of competence and continuous practice monitoring in the field of energy construction is particularly important to avoid a formal attestation of conformity, which can result in the threat to human health and life.

3 Benefits from the certification of persons

Despite the fact that the authors don't share the same views on the professional performance of certified and non-certified employees, the dominant opinion is – professional certification is considered beneficial by both employers and employees. Employees have the opportunity to demonstrate their professional attitude and competence, thus becoming more valuable to the company, as well as to build their careers and be more demanded in the labour market. It is also indicated that certification positively correlates with the level of wages and salaries (Latham, 2012), which at the same time is also one of the most important motivating factors for employees. Whereas employers can recognize their employees' professional capabilities, so the company can attract employees who are able to provide the highest possible professional work performance, thus positioning the company as a reliable one in the industry. However, as pointed out by A.S.Garza (2012) the above-mentioned largely depends on each particular organization's values because they are the basis for any strategic decision-making body. Thus, the values of the organization will determine not only how the management and employees will evaluate the certification of persons, but also the benefits from this certification. Three types of organizations can be distinguished on the basis of their core values: innovative organizations, people orientated organizations, and stable organizations (Garza, 2012).

Since each organization has its own dominating culture which determines the organization's values and also affects the employees' value system, each of the above-mentioned types of organizations will have different benefits provided by certification to the organization and the employees.

Another important benefit from the certification of persons to the organization is related to customer loyalty to the services provided by the organization and the improvement of economic performance in the long term, which has a positive effect on the organization's overall image and reputation (Kells, 2015, Wagner, 2015). Whereas M.L.Lengnick-Hall (2012) extends this statement by indicating that certification positively affects not only the reputation of the organization but also increases the value of the recipient of the certificate and their professional activities thus helping the organization to become a competitive market player. "Certification has effects both at the micro level (by influencing individual level job performance and individual level outcomes) and at the macro level (by influencing reputation and effectiveness of organization" (Lengnick-Hall, 2012). Consequently, the benefits of certification can be both internal and external (Franceschini *et al.*, 2010).

E.Auriol (2015) compares the certification process with the "black box" with its high fixed costs; consequently certification becomes a formal procedure without providing the desired results. Besides that, the benefits from the certification process are described as limited because the relatively high cost of certification creates a certification monopoly, and if the certification process turns into a profitable business, then the very process is implemented mechanistically.

Also A.S.DeNisi (2012) questions the unambiguous character of the benefits from the certification process pointing to lack of objective measurements, particularly with regard to the work performance improvement of the recipient of the certificate in comparison with non-certified employees. He points out that neither the increase of wage or salary, nor promotion or better job opportunities and a more positive assessment by the organization's management team can serve as a measurement of individual success, because any performance measurement, starting with the choice of measurable factors and ending with "positive perceptions", is subjective. The benefits

from certification to both the organization and the employees are largely related to the perceived value of certification of persons, i.e., if the organization pays very much attention to certification, then the professional performance of a certified employee will be given a greater recognition.

Upon collecting and analysing information on the possible benefits the certification of persons provides to both the organization and the employees, we can conclude that they are largely related to the organization's values and how the certification is perceived by both the organization's management and employees. Since the culture and values of each organization are different and they cannot be measured objectively, then the benefits the certification of persons provides to both the organization and the employees cannot be generalized and applied to all organizations in the same way. If the certification of persons has become a part of the organization's value system, then the benefits it provides will be applicable to both the employee's individual performance as well as the organization's overall performance, becoming a key prerequisite for successful and sustainable development. Whereas, if the certification of persons is perceived as a formal procedure and is implemented mechanistically, then the benefits it provides will be limited and will not serve as the indicator of the professional competence and efficiency of the organization and its employees.

Conclusion

Certification is a widely used conformity assessment procedure where the object can be not only a product, but also a person, process, service or certain action and under which an independent third party performs inspection of the object aiming to assess whether the object meets the necessary requirements, and issuing a certificate as a proof of compliance.

Certification of persons is one of the most common ways of evaluating professional competence that confirms that a person is able to perform their work according to the requirements set out in the professional activity sphere. In the certification of persons in the European Union and in Latvia it is most important that the service provided by the certification body complies with the requirements of the international standard ISO/IEC 17024:2013. When the certification bodies carry out certification of persons in accordance with the requirements set out in the professional activity sphere, their competence has to be assessed in the context of personal characteristics and attitudes, their ability to apply this knowledge and practical skills in situations related to professional activities.

The benefits the certification of persons provides to the organization and the employees are largely related to the organization's values and how the certification is perceived by both the organization's management and employees, and they differ in each organization. If the certification of persons has become a part of the organization's value system, then the benefits will be applicable not only to the employee's individual performance but also the organization's overall performance. Whereas, if the certification of persons is perceived as a formal procedure and is implemented mechanistically, then the benefits it provides will be limited and will not serve as the indicator of the professional competence and efficiency of the organization and its employees.

Certification serves not only as an essential competence assessment tool, but also as a mechanism of qualification control in the regulated sphere, becoming a key prerequisite for sustainable economic development of organizations.

On the basis of the conclusions made from the review of theoretical aspects, it is necessary to continue research with in-depth analysis of the process of the certification of energy constructors in order to assess whether the implementation of the evaluation of competence and continuous practice monitoring complies with the requirements laid down in the field of energy in order to develop possible solutions for the process improvement of the certification of energy constructors.

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*BUSINESS MODEL ENGAGEMENT LEVELS IN ENVIRONMENTAL
CHALLENGES FROM A MULTIPLE CUSTOMER VALUE PERSPECTIVE*

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Abstract

Research purpose Global environmental challenges show just how crucial can incorporating sustainable development principals be for a company. The article's objective is to describe how environmental challenges lead to changes in the business model towards multiple customer value creation. Results are stated later in the article.

Methodology/methods To complete the article's objective methods of secondary data collection and retrievals were use. The obtained information was afterwards compared to find and evaluate opinions of various authors dealing with the issue of multiple value.

Scientific goal The stated issue attracts the attention of scientific research, alongside with the acute ecological situation and the necessity of integrating social aspects into business models. The scientific goal was to identify approaches of various authors to the issue of multiple customer value in a way which would provide applicable knowledge to innovate existing business models in a relevant way transition to novel business models based on fusing ecological, social and economic dimensions of sustainable development.

Findings The article's results relate to the stated research question and find use as a tool to compare traditional business models and demands regarding novel business model creation.

Conclusions The necessity to research novel business models based on sustainable multiple customer value creation is expressed, at the article's end. Novel business models represent a new tool to achieve positive customer perception and acceptance of the business itself while still remaining competitive in the face of global environmental challenges.

Keywords: environmental challenges, business model, multiple customer value, sustainable development

JEL Classification: M21

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Introduction

The creation of a global economy; the shift in importance of information and knowledge in the economy; the rise of an interconnected society via communication technologies alongside with the overarching global environmental deterioration necessitate a change of course in perceived values as people, society, and civilization as a whole. This shift in interest should be regarded by businesses and taken into account when considering their long-term goals and strategies. Hence, how will global environmental challenges influence their functioning in the long run and question their sustainability. The article's objective is to describe the stages of how environmental challenges lead to changes in the business model towards multiple customer value creation. The environmental dimension of these considerations along with other dimensions (economic, social, technological, cultural, etc.) is transversal in character, as well as multiple and fractal at the same time. Although, the benefits of sustainable development are becoming more and more visible, companies which incorporate sustainable development and higher value creation (multiple customer value) into their long-term strategies are still very rare. Why? The answer to this question lies well within the doubts that such strategy will prove less competitive and will not be profitable compared to the already utilized majority business model. Novel business models have to be set to aid the company to react to the shifts in public behavior in its moral and ethical perception. Otherwise, a company unable to react to these challenges (linked to corporate social responsibility) undergoes a risk of not meeting its full potential or its product can become boycotted, which may lead to closure. Socially responsible behavior is becoming a question of survival in the long run.

2 Theoretical background

The system in which the world functions can be described as very complex, encompassing a vast number of processes and mechanics which are more or less known of, or controllable (Global assessments reports, 2005). At the same time, this system is confronted by numerous environmental challenges which lead to various consequences for companies from an ecological, social and economic perspective (technical norms, regulations, quotas, etc.).

Some environmental challenges are as follows (Lan, Sachs, Schimdt-Traub, et. al., 2013; Brabec, 2010; Tissier-Desbordes, Giannelloni, 2013) depletion of natural resources; changes in energetics; the quality and quantity of water resources; biodiversity conservation; soil degradation; chemicals and toxic products manufacturing; air pollution; waste control and assessment; stratospheric ozone loss; deforestation; climate changes; and the influence of the environment on human health.

Each and every of the aforementioned challenges poses various consequences for companies and serves a prompt to rethink a company's business model, since the sequencing of these consequences of environmental changes may cause a chain reaction which can lead up to a possible threat to the company's present business model and existence. Hence, environmental consequences become challenges which have a reach on any company no matter the industry and they can be perceived either as threats or as opportunities.

Experience shows that regarding the given strategic development it is the second type of perception which shows to be the more profitable. Challenges show exactly how much sustainable development can be a strategic game changer for any company. The company should engage in research of environmental challenges in a global scope and consider their effects in the short and long term.

The business and environmental challenges of sustainable development pose as a strategic tipping point for a vast number of companies. Those, which will only try to optimize their present status quo and incrementally innovate will be troubled by negative consequences of sustainable development, on the other hand, companies assessing the challenges and implementing radical innovation of their business model will benefit from it.

The eco-customer, i.e. the responsible customer is more and more sensitive to environmental effects provoked by their consumption behavior. They are continuously stimulated to practice responsible consumption and are conscious of the potential environmental consequences. Lewit (Kumar, 2008) in this respect underlines that the goal of business is to gain and retain the customer. According to Lewit (Kumar, 2008), profit is merely a petty statement of a company's mission statement. The call for quitting profit orientation (profit only standpoint) (Kuldová, 2010) is typical for scientific literature which deals with corporate social responsibility, explained by the 3P, "triple bottom line" or "not only profit" perspective. According to Ph. Kotler, who made the marketing concept popular in the 60 of the 20th century, generating a profit is not the purpose of the company but merely a reward for gaining satisfied customers (Kumar, 2008). No profit can be generated without a clear vision of the customer and how to satisfy them. Instead of being limited to the standard 4P marketing concept, managers should think in a much broader scope about a valued customer (who to service), the value proposition (what to offer), and the value network (how to propose value). This approach can be described by the 3V model which

answers Drucker's questions in a better way: What is the company's mission? Who is the customer? What does he/she value? What are your results? What is your plan? (Slávik, et al. 2014). Since the customer's role has very much changed and now being perceived to be at the forefront of the exchange and plays the role of the evaluator of a company's the value proposition. Therefore, business models are being put under pressure to change. The value proposition is a starting point of the development of an idea, i.e. a different business model concept (Newth, 2012).

3 Methodology

The article's objective is to present the context of global environmental challenges and the present state of literature dealing with multiple customer. The approach of assessing the matters discussed in the article, with regards to its objective, is based on the following methodology. First of all, it is compiling findings in scientific literature which deal with sustainable development strategy through the scope of multiple customer value. The research was conducted in the following databases: EBSCO and SCOPUS. Keywords were iterated while searching within the databases in the context of sustainability, business model, green management, sustainable marketing, eco-innovation, and sustainable economics, corporate social responsibility, multiple value, triple bottom line, etc.

The research of non-commercially published articles in paper or electronic form provided numerous leads about the issue of multiple value, business models, definitions of sustainable development, and approaches to business model innovation. Literary findings about business model concept and value creation tools were generated based of the research. The existing frameworks around multiple customer value and business models were evaluated in connection to environmental challenges.

Theoretical aspects of multiple value are illustrated in the bibliographic resources selected via comparison. The research has enabled to coin the importance of multiple customer value also from a practical standpoint, i.e. the interest of company managers in the connection with sustainable business modelling.

The main topics of the retrievals enabled not only the definition of the issue's theoretical framework but also to formulate the following research questions:

- How to describe multiple customer value?
- What is the business model engagement level in connection environmental challenges?

The answer to these two questions creates a starting point for prosperous business models which envision changing the existing business model into a novel business model via means of synergetic reactions of the company adaptation to the three key dimensions: ecologic, economic, and social, which define multiple customer value.

3 Discussion

As it seems, based on the retrievals, sustainable multiple customer value creation is a topic which is causing lately a raise attention in various disciplines of management: strategic management, marketing, accounting, controlling, etc. Equally, there are various approaches to multiple value and differentiated approaches to business model research.

The ratio of theoretical approaches to multiple value and business models alike necessitates their evaluation and interpretation. Therefore, it is crucial to state their importance in the context of the given research.

3.1 Multiple customer value

The conceptual framework of achieving the goals of sustainable development in business creates the essence of multiple value which consists of financial, social and environmental goal (Jonker, Rauter, Baumgartner, 2013). The term is often interchanged with the "triple P" (people, planet, profit) criteria by Elington (Noran, 2014) in an effort to surmount the faults and contradictions of the existing "triple C" principle (carboniferous, consumer, capitalism).

Multiple value creation is a relatively new term in business (Marberg, Jonker, 2007). Profit and maximizing it was (and still is) the main goal for every shareholder. However, more and more executives are interested in stakeholders and how to align their interest with the company's goals, since this alignment plays a major role in the company's long term success. Furthermore, it signals a change which has the potential to dominate and become an overarching theme in business.

The term "multiple value" widely defies economic criteria. Bascoul and Moutot (2009) introduced the similar term "extended value" which includes externalities and is the basis of sustainable marketing. The environment and the society are two places where externalities, whether negative or positive, can change the value

proposition. Furthermore, according to the authors the term of “extended value” enables the integration of corporate social responsibility and sustainable development, since it does not limit itself only on the social dimension of customer behavior. For a company to be sustainable, its contributions should not be measured by only one dimension, the market, but also by an environmental and social dimension. Hence, the “triple bottom line” concept by Elington. Therefore, it is a bilateral value sharing mechanism with materialistic and spiritual values on one side, and ethical and moral values on the other (Pastore-Reiss, 2013).

If economic, environmental and social dimensions form the pillars of sustainable development, then a company does not only satisfy the customer’s needs but also meets their expectations in connection to their environmental and social situation. This empowers the customer to understand, control, and direct the reach of his/her consumption and lifestyle. The ordinary supplier or service provider now becomes an important partner which engages in the customer’s future well-being, whether on a B2B or B2C market.

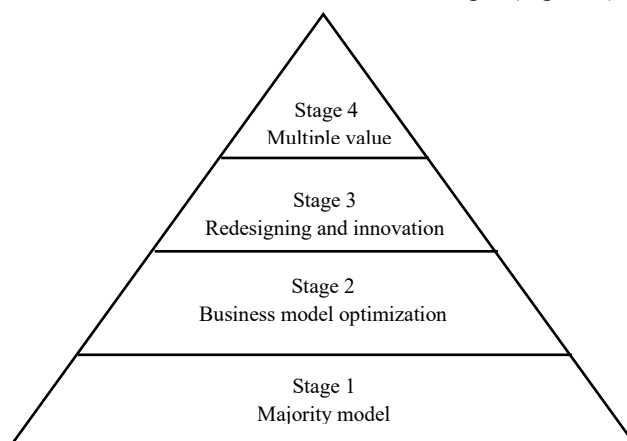
In connection to negative environmental and social consequences which determine the individual’s perception of the value proposition. Fahd (2013) identified eight dimensions of the value proposition linked to the product itself. Stating that social and environmental values are in line with current needs to produce and commercialize services which respect the collective interest of society. Innovation and value creation are malleable and increasing their reach. There is a shift from a product concept to solution propositions based on the network created with other stakeholders (suppliers, customer, NGO, etc.).

Among the theoretical and practical solutions aimed at aligning socio-economic development and the requirements of environmental protection, it is necessary to mention the concept of shared value proposed by Porter and Kramer (2006) which shifts the utilized concept of corporate social responsibility into a new pragmatic field. The concept aims at identifying and extending the link between social and economic progress. It is based on the assumption that the competitiveness of a company is naturally connected with the well-being of the community where it is situated. The authors underline the necessity to adapt to new demands in product innovation, extending markets and activities of the value chain through the scope of value.

The most advanced companies have begun to realize the importance of mutual interaction. Therefore, prosperity is dependent on a well-functioning society. Therefore, the effort is aimed at creating shared value by incorporating social issues into their commercial strategies which will, in the end, serve as a boon for the society and strengthen their long term competitiveness, at the same time (Stankovič, Bašistová, 2015).

3.2 Business model engagement level in connection to environmental challenges

Business model engagement in connection to environmental challenges describes changes in the business model development (Brabec, 2010). The company’s engagement level result from the company’s business model and fall into these stages of involvement with environmental challenges (Figure 1).



Source: Author’s own study

Figure 1: Levels of business model engagement in sustainable development

The lowest level of engagement (stage 1) consists of companies which preserve a majority (existing, i.e. most commonly used business model in a given industry) business model. Although, these companies declare willingness to face environmental challenges, the reality is contradictory the claims due to the preservation of their existing business model. They become content with minor cosmetic changes like “greenwashing” (misinformation spread to create an environmentally friendly image). Their position, thus rests unchanged. This is becoming the case of more and more big companies.

The second engagement level (stage 2) are companies which strive to optimize their existing business model to aid the ecological aspects of their business. This phase allows the companies to differentiate themselves from their competition with their cost structure, mainly in waste management. Achieving this first engagement level is linked to the following processes: recycling (recycled materials can be used as additives or separately in the production process to lower production cost and sometimes improving final product characteristics), product re-use (includes collection, sorting, sales, etc.), energy and raw material consumption reduction (less emissions, waste, etc.).

Optimizing existing the business model requires taking into account the subjects and processes which participate in the phase of product conceptualization, as well as their usage, and finding opportunities to recycle, re-use and reduce material consumption (Dawar, 2013).

Environmental challenges of sustainable development promote opportunities to achieve the second business model engagement level, i.e. re-conceptualizing (redesigning) the existing solution and innovation towards finding new and more effective solutions (Nunes, Breene, 2011). In both cases, the matter of fact is ecologic impact, cost reduction, and multiple customer value creation.

There is a plethora of opportunities where a company can redesign its business model to respond more effectively to environmental challenges: renewable energies and materials; reduction in energy, raw material, natural resource consumption; production processes improvement; pollution prevention; prolonging production lifespan; packaging and distribution optimization; emission reduction; local employment rate improvement; waste reduction; ease of product decommission and disassembly; employee health improvement; etc.

However, surpassing incremental innovations demands complex results and their verification. Therefore, novel business models are defined as innovations which create significant positive impact and remarkable decrease of negative impact on the environment and society. This is a result based on changes in organization and the created value network, value delivery and value capture systems or changing the value proposition. Multiple value creation, means creating a competitive advantage in the cost structure while having a greater positive impact on the environment than that of the existing solution.

Future company results depend on current entrepreneurial innovation which leads the company to micro-differentiate its business model and customer perception from their competitor's (Zook, Allen, 2011). The sum of these micro-differentiations is important on the path to a novel business model approach based on radical innovation within the context of multiple customer value creation, and ultimately, it leads to a unique value proposition.

Multiple customer value creation and sustainable innovation development lies at heart of business model innovation applying principles of sustainable development. In this respect, production technology assessment and production as a whole promoting eco-friendliness ensures that the product/service exceeds beyond the boundaries of its home market (Nidumolu, Prahalad, Rangaswami, 2009; Červený, Hanzelková, Keřkovský, Němeček, 2013).

From a standpoint of technological, social and organizational innovation (Bocken, Short, Rana, Evans, 2015), the following prototypes of sustainable business models were created, with regards to the aforementioned categorization (Boons, Ludeke-Freund, 2013): maximizing material and energy efficiency; create value from waste; substitution by renewables and natural process; delivering functionality, rather than ownership; adopting a stewardship role; sufficiency encouragement; re-purposing the business for societal/environmental demands; developing scale-up solutions.

The fourth level of engagement (stage 4) is linked to creation of a unique value proposition which clearly differentiates itself within the context of sustainable development, given that sustainable development had become the core corporate strategy (stage 3). The unique value proposition is a result of micro-differentiation originating from comparing the company's own value network with the average industry value network. The sum of these features promotes uniqueness.

The transition from stage 3 to stage 4 requires that sustainable development becomes imperative in the corporate strategy and executive decisions. The result of stage 4 is a strategy encompassing environmental and economic aspects with aspects of well-being. This strategy is in line with the very last stage of differentiation and creates new opportunities of engaging employees, the environment, cost structure, value capture, as well as, customer value resulting in a unique value proposition.

4 Findings

Environmental mindfulness creates vast opportunities for new businesses. New consumption models take into account the ecological and social reach require new techniques of production, commercialization and organization.

Definitions of customer value creation, formulated so far, are becoming less relevant, due to the multiple customer value approach. They are based on added value creation on the value network level, as well as, customer level. Multiple value is the foundation of a unique value proposition, therefore, requires adaptation of perceived value as by the company, as by the customer, due to social aspects derived from human resource engagement, cost structure changes, value capture, and positive environmental impact.

The business model is the one of the economic terms used in theory and economic practice which can be defined as a system value proposition mechanism, value creation, delivery and capture (Grandval, Ronteau, 2011; Sempels, Hoffmann, 2011).

The business model concept is an inseparable part of entrepreneurship. The main aim of its utilization is to come to a simple understanding of the current economic situation by applying structured framework which is becoming more and more sophisticated.

The differences between business models lies in their specialization: the goal of a profit oriented company is to maximize economic profit, whereas, those companies whose business model is based on a threefold responsibility (triple bottom line) have a clear ecologic and social bearing on economic goals. Similarly, as with minimizing financial costs and revenue maximization profit increases, business models based on the triple bottom line concept try to reduce negative environmental impact (costs) and maximize positive contributions (advantages, economic efficiency, etc.), i.e. to ensure their development according to profit and to cover costly demands of sustainable development. (Osterwalder, Pigneur, 2012). Current business models are described by their sustainability and called “novel” business models. In a broader scope, a sustainable business model aligns the interests of all stakeholders and explicitly ranks society and the environment among key stakeholders. Multiple customer value, thus lies at the very core of novel business models (Stubbs, Cocklin, 2008).

A novel business model deviates from the traditional “*produce more, consume more to earn more*” concept which proves to be unsustainable in the long run (since there’s no business to be done on a dead planet). Business model conceptualization based on a sustainable strategy is key to adopt a novel business model.

Sustainable development is a long term change for companies. The fact has a reach on the survivability of existing business models and requires their change. This shift can seem to be slow in some industries, but nevertheless present across all industries and gaining more and more traction.

Novel business models are being connected with activities like reconceptualization (redesign) and mainly innovation which relates to stage 1 (figure 1) of business model differentiation. Innovative sustainable business models based on multiple customer value creation are oriented at creating cost structure advantages and positive environmental impact, compared to existing solutions.

Conclusions

The environmental challenges posed by sustainable development confronting companies creates tangible opportunities for dynamic growth. Research based on literary retrievals shows that these challenges require a new approach to value creation. The domain of values is enlarged and it is expected from companies to react. It is undeniable that simple creation of materialistic and spiritual values does not suffice any more. The integration of sustainable development into the company’s values, strategies, as well as, marketing. Their impact on multiple customer value creation is still its beginnings. The company should learn how to manage new expectations and be open to new options.

The article not only presented a theoretical research framework of novel business models based on multiple customer value creation, but also current creation methods in the context of environmental challenges of sustainable development. There is a considerable amount of effort to be given, mainly when it comes to novel business models. The orientation towards novel business models allows a better understanding of how environmental and social values are transformed into a unique value proposition of newer, improved products with improved characteristics that satisfy customer needs and have a positive impact on the environment.

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WOMEN'S MIGRATION PROCESSES FROM GEORGIA

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Abstract

Purpose of the article Purpose of the paper is to study the territorial movement of population in line with predictable and unpredictable changes following world globalization, with its economic and social-political outcomes having become a severe problem for Georgia.

Methodology World Bank database, materials of Ministry of Resettlement and Refugees of Georgia, IOM's assessment mission report Review in Georgia and data of Geostat were used in the study. Methods of statistical observation, grouping and analysis were used to determine the migrants' distribution from Georgia according to age and sex.

Scientific aim Scientific aim of the paper is to throw light upon the migration process of women from Georgia in political, economic and social respects and identify the trends and advantages and disadvantages of this process.

Findings Traditionally, mostly men made up the labor or study migration currents from Georgia. Since the 1990s, the picture has changed. As the statistics of 2014 suggest, 65 females are encountered for every 100 migrants. This ratio changes according to women's age groups.

Conclusions Georgia, in respect of migration, is a country of origin, destination and transit. In economic respect, women's migration from Georgia is justified, as money sent by them is the means of living for their families and plays a role in overcoming poverty. For women migration meant not only hardships, but fostered a hope to see something new and adventures. Many women discovered themselves "there". Recently, many young girls have left Georgia. Studies demonstrate that migration-prone attitude is quite strong among young people. Such a situation needs much consideration and contemplation by every citizen, whole society and government of the country, as Georgia is going to face severe demographic, social-economic, national security and other problems.

Keywords: feminization of migration, migrants, demography, statistical analysis.

Jel Classification:G1

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Introduction

In the face of world global processes, predictable and non-predictable changes take place. Intensity of population's territorial movement belongs to such changes and this movement is already an urgent global problem with its economic and sociopolitical results. In the era of globalization, international migration processes have gained completely different scale, intensity of migration between source and destination countries, as well as geographic scope, gender and age structure of migrants, reasons and factors of migration have changed. According to UN's estimation, in 2000, when world population reached 6,057 billion, number of international migrants was 2.9%, i.e. 222 million and in 2015 this number reached 244 million (International Migration Report 2015, 2016). Migration is an urgent problem in Georgia too. Besides, it is worthwhile to note that number of migrants from Georgia grows every year and majority of migrants are women. Feminization of migration isn't a specific Georgian trend. Such trend exists in a whole world. In the past two decades new patterns of female migration have emerged as a result of geopolitical conflicts and economic restructuring in Eastern Europe and the Third World. So too has international mobility due to economic opportunities, higher levels of education and possibilities for travel amplified temporary and permanent migratory movements (Kofman, 2003). Experts think that gender specification of Georgian migration (as well as other developing countries) is related to hard economic conditions. Additionally, high rate of feminization of migration can be explained with cultural factors and high demand on women at international labor market.

The aim of work is to study territorial movement of population (particularly women) as a result of world global processes and describe the process of feminization of migration in Georgian reality. We must answer the question whether the reason for feminization of migration is women's boundless love towards their children or hard economic conditions of a country. Maybe the reason is that men have less desire to migrate for improvement of economic conditions.

The theoretical basis of research is works of Georgian and foreign scientists and economists about the corresponding subject. The authors include E. Kofman, H. Zlotnik, R. Gachechiladze, N. Chelidze and others. Their works describe demand and supply of working force, reasons and perspectives of labor migration of Georgian population, as well as social and economic results of migration (Labor migration in Georgia, 2003).

In the research process, we used database of World Bank materials of department of migration control of Ministry of Accommodation and Refugees of Georgia, IMO report of mission on review of migration management in Georgia (Review of migration management in Georgia, 2008). On the basis of data of National Statistics Office of Georgia, distribution of immigrants and migrants was estimated according to age, gender and citizenship. The techniques of statistical observation, grouping and analysis were used in the research process.

Scientific aim of the paper is to throw light upon the migration process of women from Georgia in political, economic and social respects and identify the trends and advantages and disadvantages of this process.

1. 1. Georgia's migration General Characteristics

If until 1990's of the 20th century, we have only known compulsory migrants from Georgia because of political and economic reasons, recently the scale of migration has exceeded any expectation. Georgia was in post-war condition, hopeless, cold, dark, unemployed and hungry. Professors were standing behind the shop-boards selling the products, many people were unemployed, houses were dark and cold. The main victim of this political and social chaos was a Georgian man (Chelidze, 2006). These processes had impact on every region, city and village of Georgia. Number of immigrants, who are leaving Georgia for survival, is still increasing. The modern Georgia is an explicitly donor country, if we consider migration processes and the main recipient countries are Russia, Turkey, Greece, Germany and USA. According to information of the Office of The State Minister of Georgia for Diaspora Issues, on 1st January, 2015, approximately 1,607,744 our countrymen are living abroad. Most of them are living in Russian Federation. Their number reaches 800,000 and 285, 915 (2009) of them are citizens of Russian Federation. The following countries are signified with multiplicity of our countrymen: Turkey (100,000), United States of America (80,000), Azerbaijan (35,000), Spain (30,000), Germany (25,000), etc. (Office of The State Minister of Georgia for Diaspora Issues). Unfortunately, this data isn't precise. In reality, numbers are higher.

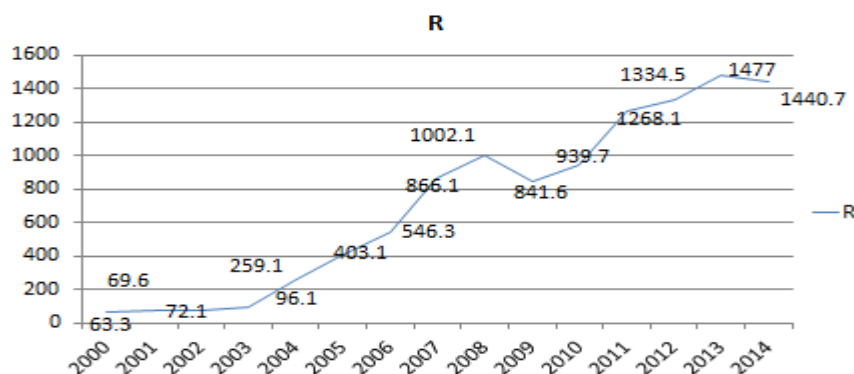
1.2 Social and Economic Aspects of Women's migration from Georgia

In the field of international migration, international organizations, as well as academic studies, mainly have paid attention to men migrants until 1970s. Men migrants were perceived the basic working force and generally, migrant was considered as a man with passively attendant family member, particularly wife. Such attitude was related to economic aspects of international migration, because it was implied that women only minimally participated in international labor migration (Zlotnik. 2003; Kofman et al., 2000). In 80s, women migrants

gained more attention, because of global trend of feminization of migration. Afterwards, studies considered women not only as the passive dependents on husbands, but as the independent actors, working in different fields of labor market. Women were basically employed as carers and nurses (Selm, 2005). UN published its report in 1998 and firstly underlied high number of women and girls among international migrants. In 1960s, already 47 were women from 100 international migrants. In 2000, 49% of migrants were women (Zlotnik, 2003). According to UN's newest report, in 101 countries, more than half of migrants are women (International Migration Report 2015, 2016). All these data confirm increasing feminization of international migration.

The global trend of feminization of migration is tangible in Georgia too. Women's labor migration hasn't been characteristics of Georgia until 1990s "For traditional, Georgian mentality it was unacceptable to compel women, leave families and go away in search of a living. But because of reality, deep socio-economic crisis and drop of living standards, labor migration became one of the ways of physical survival of Georgian population; afterwards, women widely participated in the process of labor migration (Gachechiladze, 1997). We can call this process social despair. Women migrated to foreign countries one after another. Women migrants are in more unfavorable and disadvantaged conditions at labor market as the women and as the migrants. They are offered low-wage jobs and they take low wages. Women are discriminated. In spite of these threats, women are still risking. It is reality of our country and unfortunately, number of migrants still increases. According to UN's report on international migration of 2016, from 168,800 international migrants of Georgia, 56.8% are women (Review of migration management in Georgia, 2008). Of course, child's welfare is the main source of happiness for Georgian mother, but we must ask, what is the price of it. The price is caring for other women's children, rupture of invisible threads with her children, abandoned parents while caring for others' parents, disturbed relations with her husband, although these relations are close to farce. "Large-scale outflow of labor resources from Georgia can be economically justified, because money sent by labor migrants is the only daily riches for many families. Money transfers are the main source of external onflow and play significant role in overcoming the poverty".

In 2014, migrants from developing countries sent home an estimated US \$436 billion in remittances; a 4.4 percent increase over the 2013 level (World Bank, 2015), far exceeding official development assistance and, excluding China, foreign direct investment. Money transfers increase every year in Georgia too. Different international studies confirm that women migrants spend much less money and send more to family members, than men. The reason for this is that women spend less on their private needs and send money on a regular basis. If we take into account that more than half of migrants from Georgia are women, majority of transactions are on their side and women are only bread-winners for many families and relatives. Moreover, migrants' money transfers exceed direct foreign investments in our country. According to statistical reports of commercial banks and micro-finance organizations, in 2011, migrants sent approximately 1,268 million US dollars and in 2014, this number was 1440,8 million US dollars, what is more than one-third of state budget. In January-October of 2015, 714,3 million US dollars were transferred and it is 250,1 million US dollars, i.e. 25.9% less than in January-October of the past year (Figure 1).



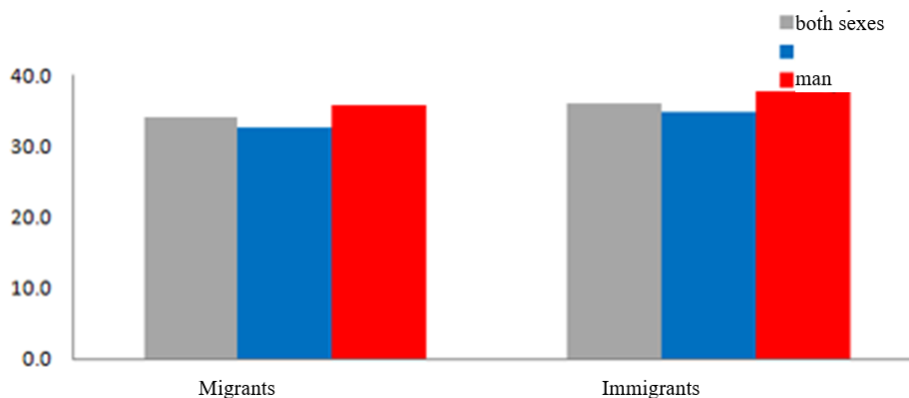
Source: National bank of Georgia

Figure 1. Growth of money transfers (in million US dollars, nbg.gov.ge)

Majority of money transfers are spent on daily needs, such as food, clothes and communal taxes. Only small portion of this money is invested in business. According to data of integrated research of households, money transfers decrease level of poverty by 2%, if threshold of poverty is 60% of median consumption.

On the basis of data of World Bank, experts indicate that money transfers occupy not less than 60-70% of whole income from Georgian migration. Therefore, aggregated indicator of money transfers of Georgia can be up to 2.1 billion US dollars. It was 12.1% of GDP (GDP - 17,266 million US dollars) in 2014, it outnumbers direct foreign investments by 65% (1,272 million US dollars) and it is not much less than export (2,861 million US dollars). Money transfers are mainly used as a living-wage for population and therefore, their impact on social stability is very significant.

Out of every 100 Georgian migrants, going to improve economic conditions, 67 are women. Proportion changes in favor of women in higher age groups. For example, According to the data of the National Statistics Office of Georgia (2016) out of every 100 migrants, who are 40-44 years old, 61 are women, in 50-54 age groups, the same number is 69, but above 60, number of women decreases (Figure. 2)



Source: National Statistics Office of Georgia, 2016

Figure 2. Average age of immigrants and migrants according to gender

In studies of 2008-2009, related to migrant women and gender problems, different reasons for migration were named. Young women, most of whom are migrating to Germany as a nurse, named European education and possibility of legal work as the reasons for migration. What about relatively old women, their choice was totally determined with economic goals. Their majority was participating in the process of illegal migration to financially support their families. Studies confirm that in many countries, structural changes of labor market caused feminization of labor migration. Women, who are single, married or better educated than men, try to find a job abroad and improve living conditions. Migration implies certain novelty and adventure with a terrible ordeal, because each migrant, may she be shy housewife or successful women, tried to find compensation for those terrible years of stress and fatigue. They prepared for a new life that required hard work and will, but promised luxury of remaining alone with herself. Therefore, it is not a lie that many women found themselves exactly "there". Traditional gender model of labor distribution changes step by step. Employed women participate in formation of family budget along with men. For women not only financial factor is important, but moral too. Women's family activities became non-prestigious. Woman employed in non-formal sector feels herself more comfortable and independent. Therefore, many women choose to work outside family.

The reason for women's labor migration is hard social and economic conditions of families and this situation has negative impact on development of families. For women, being outside family, is harder than for men. Majority of Georgian women migrants are going to Greece (24.3%), Germany (23.5%), USA and Russia (14.3%). Migration often has illegal forms. Studies indicate that majority of women are employed in service sector. They work as nurses (33.1%), tutors (9.2%), waitresses (4.8%), housemaids (9.2%), salespersons (5.5%), etc. (Chelidze, 2006).

Youth's labor emigration can be considered as a positive phenomenon if it is of short term and returnable nature, takes place in legal way and the purpose of leaving corresponds to the existing real situation in a receiving country. In addition to improving material conditions, the main purpose of students' emigration is a desire to get education, to improve their knowledge in foreign languages and gain experience. At the same time, it is acknowledged that through the short term emigration more funds flow into the country than through the long term one. Beside remittances, returned youth's professionalism and their high competitiveness is much more valuable (Chelidze, 2005).

Many young people have left Georgia in recent period because of numerous reasons and problems. Probably, many will leave in the nearest future. The results of our study indicate that predispose to migration is quite

strong in our youth. More than half of young people (51.9%) are psychologically prepared to go abroad and in corresponding conditions may become migrant any moment. Also, it is worthwhile to note that every fourth young person (24.4%) isn't planning to leave the country and one-third, i.e. 8% of respondents is categorically against this. Besides, many potential migrants have desire to return back. Absolute majority of respondents (84%) think that in the case of leaving country, they will definitely return to homeland. It is also worthwhile to note that majority of migrant family members of respondents (66.6%) haven't returned to Georgia. Probably in this case desire and reality are far from each other.

At the same time, unmanaged labor migration can gain more negative features. In case of non-return of youth, country experiences direct economic and demographic losses that results in the fall of labor potential. In relation to this, the government's objective is to find a compromise between youth's labor migration and maintaining the necessity of their return; to collaborate with the countries where the labor migration is directed in view of mutual profitability, effective use of human resources and protection of their citizens' labor and social rights.

Conclusion

According to quantitative and qualitative studies that were conducted in Georgia before 2015 and that were related to migration, as well as analysis of documental video materials, revealed several basic factors of feminization of migration. These factors are positive attitude of society towards women's labor, high demand on women's labor in foreign countries, women's feeling of more security while living abroad, women's high responsibility towards their children and other family members;

Facilitative factors of women's growing migration are considered high indicator of divorces and scarce opportunities of local economy. Besides, significant factor is high demand on women at labor markets of neighboring countries (so-called "feminine" labor) and all these support women's migration;

Women's large-scale migration from Georgia can be economically justified, because money sent by labor migrants is daily riches for many families. Money transfers are main source of external onflow and play significant role in overcoming poverty;

Migration implied certain novelty and adventure with a terrible ordeal, because it required hard work and will, but promised luxury of remaining alone with herself. Many women found themselves exactly "there". Employed women feel more comfortable and independent, that's why they choose employment outside families, if there is any opportunity;

In the recent period many young women have left Georgia. The results of study show that predisposition towards migration is quite strong in youth. More than half of them (51.9%) are psychologically prepared to leave Georgia and in corresponding conditions, may become migrant any moment.

The current situation requires serious consideration and discussion from every citizen, whole society and authorities. State's role must inevitable increase in regulation of potential and real migration. In different case, Georgia will face serious demographic, socio-economic, political, national security and other problems.

State must care for improving living conditions. Good living standards mean high productivity. It implies multiple jobs, high wages and at last we have the main result: gender equality at labor market and less migrant.

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CORPORATE CULTURE IN TERMS OF LABOR DIVERSITY

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Abstract

Purpose of the article The purpose of the paper is to share the information to the respondents of the study about the important elements of the organizational culture, determine how well a strong organizational culture can lead to synergy and high job satisfaction in terms of diversified labor.

Methodology/methods The paper considers various studies, reports, data and articles published regarding the above-described issues. When working on the paper, both, deduction and induction methods were used. The study used the methods of statistical observation, grouping and analysis.

Scientific aim The scientific aim of the paper is to identify the level of awareness of the Georgian society and sometimes, improving it in connection to the questions of the organizational culture in terms of the labor diversity. Also, to study the influence of the organizational culture on individuals, teams and gross productivity of the organizations.

Findings It was found that it is impossible to arrive at the desirable employee's behavior under the stressful working environment. When an employee is in a stressful environment, his/her health deteriorates, his/her emotional balance reduces and he/she experiences a chronic stress and inability what leads to the diminished labor productivity in the final run. Such losses cost a company a lot. Therefore, it is better to timely respond to the problems leading to the undesirable situations, solve the questions and manage the conflicts in order to avoid extra costs and nuisances.

Conclusions To sum up, attention must be paid to the establishment of a strong organizational culture and common values to bring them down to all employees. The members of an organization must be aware of the properties, priorities and meaningful aspects of their companies.

Keywords: corporate culture, labor force diversity, integration, consolidation, job satisfaction, efficiency.

Jel Classification: J5

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Introduction.

The organizational cultures are as many as there are organizations in the world. As for the organizations, they are distinguished for the labor diversity in terms of globalization, and such state of affairs also contributes to the diversity of the organizational culture. Surely, there are no unilaterally standardized criteria to assess the culture, as culture is subjective and in order to consider it successful, it must be able to consolidate and integrate the company members and bring the main say of the company to the notice of every employee and society. Thus, I agree with the view suggesting that culture is a certain kind of medium between the organization and the outer world. Following the globalization processes, the organizational culture becomes increasingly important. If in the past, the major accent was made on the technological innovations, at present the phenomenon of a human capital is a priority, as it is considered a driving force of any organization and main leverage of competition. Then, there is a question, as to if the personal and professional characteristics of the company employees are sufficient to meet the modern requirements, what is the role of the organizational culture within the organizations?

The way the organizational culture and climate influence the organization members depends on how well the internal environment of the organization and its members' personal features "match". Those who successfully comply with the culture and the climate are more self-confident and experience satisfaction. As for the others, they may become victims of stress or aggression and may even leave their companies. (Schermerhorn, Osborn, 2013)

Diversity is a subjective phenomenon created by the group members, who are categorized as one group based on a specific identity making them different from other groups. The primary trends of diversity are: gender, ethnicity, race, orientation, age, mental and physical skills and the like. The secondary trends are education, geographical location, religion, native language, marital status, mode of work and work experience, organizational role, income. The secondary trends influence the self-esteem and self-perception of an individual. As we can see, diversity is multi-dimensional, and the unique synthesis of these dimensions shapes an individual's personality, who brings these traits to the working environment. Diversity issues are now considered important and are projected to become even more important in the future due to increasing differences in the population of many countries (Mazur, 2010). The organizational culture of a company must recognize and respect such diversity.

The question of diversity at the organizations has been studied for many times. The studies reveal that the versatility helps increase the efficiency however, quite often, it leads to an emotional conflict the organizational diversity increases either in, or outside the team, social barriers are frequently formed. The team members find it difficult to identify themselves with some organization, as they have problems with relations and communication. The barriers can be diminished through the recognition and respect of the identity. The organizations facing such challenges try to solve the problems through socialization and intense engagement of their employees. The managers are well aware of the advantages of diversity and use the advantages of human capital and resources in an expedient manner to attain common goals. It is such multicultural organizations successfully operating on the international markets. In terms of globalization of the 21st century, it is the strong organizational culture allowing us to solve the problems of group members, set aims, and identify behaviors and expectations. The observations of a range of organizations showed that the principal element of the organizational culture is the reflection of the world-view, culture and mentality of the organization leaders/founders. Besides, quite often, national cultural and religious elements are demonstrated in the organizational culture. The organizational cultures of giant companies often influence concrete countries.

The purpose of the paper is to study an organizational culture. Organizational culture management in the variable and accelerated world of the 21st century is a serious challenge, as the number of factors influencing the culture is great. Besides, it should be considered that in response to the requirements of the modern variable world, a relevant adaptation and changes of the organizational culture and expedient control of these processes is necessary. In the past, the characteristics of the organizational structure concept were not so clear, but today, as the practical trends evidence, managers often talk about the establishment of the local environment within the organizations, which will be more favorable and desirable for their companies. There is no culture equally efficient for all organizations. Culture is formed under the influence of such factors, as the organizational goals, specifics, nature of competition, etc.

The social system of the organization incorporates a corporate social responsibility (CSR). In the modern developed world, CSR has become a new method of running one's own business. In modern view, CSR consists of such components, as corporate management and ethics, protection of human rights and fundamental labor rights with collaborators, suppliers and consumers, environmental protection, societal care, and responsibility for

business and transparency. All these are particularly important in terms of the labor diversity. The role of the organizational culture and CSR in the general development of the country is also worthwhile.

The theoretical and methodological basis of the paper is the studies of Georgian and foreign scientists and analysis of the organizational culture, social system and corporate social responsibility (CSR) issues. The paper considers various studies, reports, data and articles published regarding the above-described issues. When working on the paper, both, deduction and induction methods were used in connection to the said issues and discussions. The study used the methods of statistical observation, grouping and analysis.

The scientific aim of the work is to identify the degree of awareness of the study respondents of the study questions. At the same time, the aim of the paper study is to share the information to the respondents of the study about the important elements of the organizational culture. The scientific aim of the paper is also to study the influence of the organizational culture on individuals, teams and gross productivity of the organizations. The aim of the study is to determine how well a strong organizational culture can lead to synergy and high job satisfaction in terms of diversified labor. It is also important to study the organizational culture as of a scientific trend and classify the types of culture. It is the essence of these factors making our paper study object topical. The managers are challenged by enduring demand for making decisions to solve the problems and reach the major strategic goals. Even the best managers are not secured against mistakes in the decision-making process, but they can improve the percentage of the right decisions they make by keeping in mind some factors causing wrong actions. We have studied these factors to clearly identify and underline the reasons for wrong actions. This will help avoid problematic situation in the reality (Paresashvili, Abesadze, 2014; Paresashvili, 2014).

The scientific aim of the paper was to conduct the study of the said issues with the goal of identifying the level of awareness of the Georgian society and sometimes, improving it in connection to the questions of the organizational culture in terms of the labor diversity. The results of the study evidenced that certain groups of the society are aware of the above-mentioned issues, but their knowledge and awareness is mostly superficial. Consequently, in order to improve the management and business environment in Georgia, it is necessary to strengthen the human capital awareness of the study questions.

Organizational culture in dynamic environment

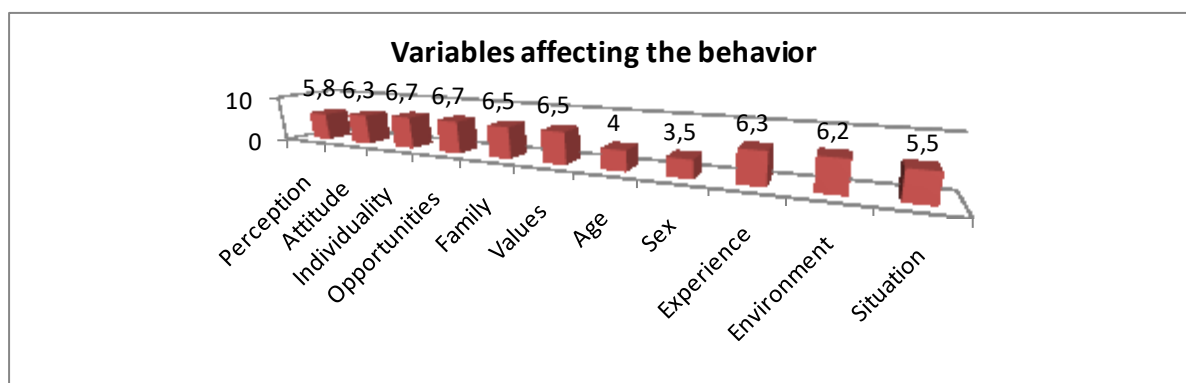
Every organization has its unique culture distinguishing it from other organizations. Every organization sets its own business management philosophy and principles, value system, behavioral standards, ways of problem-decision and means of decision-making, labor atmosphere and history of company values. De-spite the fact that the study showed a great influence of the labor diversity (e.g. gender, ethnic origination, orientation, race, age, disability, etc.) on the organizational culture, the primary factor influencing the cul-ture is the national factor, as well as social medium, which is the carrier of the spiritual values and world vision of an individual. Consideration of the national elements makes the organizational culture even more unique, distinctive and attuned with the environment. The leader who understands his organizational cul-ture, and takes it seriously, will be capable of predicting outcomes, and making decisions to counter antic-ipated consequences. The study revealed that both, the employees and employers still fail to recognize the importance of the corporate culture for the organizations. Organisational cultures often conflict with the culture the management envisage, resulting in subcultures within organizational cultures which have a dif-ferent set of values to the corporate culture of the organization (Towers, 2006). In addition, the managers fail to pay due attention to the questions of interdependence and mutual influence between the corporate culture and the concept of diversity. many efforts to improve organizational performance fail because the-fundamental culture of the organization—values, ways of thinking, managerial styles, paradigms, ap-proaches to problem solving—remains the same Today, in terms of tough competition and highly dynamic processes, the culture is a dynamic system itself with the influence on all processes within the organiza-tion. The longer the individual stays within the organization, the better he/she adapts to the company envi-ronment and dominant values of the organization. (Paresashvili, 2015, 2012) Strong organizational culture fosters consensus, sense of stability and security among the company employees what in our opinion, is a very important factor, as it leads to the moral balance of individuals. All these factors result in high work productivity and job satisfaction. Culture gives the sense of organizational unanimity to the employees, creates images of the company and is the source of stability fostering the sense of security among the company employees. At the same time, awareness of the organizational culture helps the new employees to successfully integrate with the ongoing events of the company. Culture stimulates high responsibility of the company employees, gives them experience and helps recognize the creativity and merit of the compa-ny professionals.

We often talk about the increased labor productivity and higher job satisfaction, which are unthinkable unless the innovative processes are introduced to the company. For successful reengineering, the Georgian companies need the following measures by considering the Georgian traditions:

- Balancing the interests of the parties concerned with the business of the organization. An organization must have the culture helping to meet the interests of all major stakeholders. Prioritizing the interests of some stakeholder may become a reason of unsuccessful reengineering.
- Reaching technological balance regarding marketing, information systems and organizational structure.
- Ensuring the balance between the different levels of the organizational culture.
- Ensuring the balance between the different elements of the same level of the organizational culture.
- Attaining the level of development of the organizational ideology where the efforts, innovative skills and optimism of the company employees are thoroughly realized.

During the reengineering, the organizations make radical changes, where the organizational culture plays a role of a catalyst of the events on the one hand and changes itself, on the other hand. But we should consider that many efforts to improve organizational performance fail because the fundamental culture of the organization—values, ways of thinking, managerial styles, paradigms, approaches to problem solving—remains the same (Cameron, Quinn, 2006).

The experience of the leading companies evidences that their culture allows for the changes in terms of maintaining the major ideological principles and stimulated the statement of complex tasks to help the company employees develop and the companies to progress. Quite often, an organizational climate greatly influences the employees' behavior. However, perception, personality, attitudes, opportunities, skills, culture and other variables are also very important. We conducted an anonymous query at some companies and asked the respondents to evaluate the impact of different variables on their behavior. The results of the query are given in Figure 1.



Source: Author's own compilation based on the materials of the research

Figure 1. Variables affecting the behavior

By considering all the above-listed factors, it is clear that it is impossible to arrive at the desirable employee's behavior under the stressful working environment. 51,6% of the respondents think that they work in a stressful environment; 40,6% think that they do not, while 7% find it difficult to give an answer. As for the reasons for stress, they include manager's incompetence, authoritative regime, unfair and non-democratic environment, etc. The respondents do not name the concrete factors contributing to the stressful environment.

A failure in perception is another problematic issue. As the theoretical portion of the study suggests, the managers and their subordinates perceive the world differently. As for Georgia, 78% of the respondents state that the compliance of their perception and that of their managers depends on a specific situation; 20,1% state that their perceptions are absolutely different and 1,6% state that their managers' perception totally coincides with their own perceptions. The study analysis reveals a major problem in this field in Georgia.

In evaluating the job satisfaction, the degree the managers and organizations support the innovations and creativity is crucial to analyze. 57,8% of the respondents say that such a process takes place at their companies, while other 42,2% say it does not.

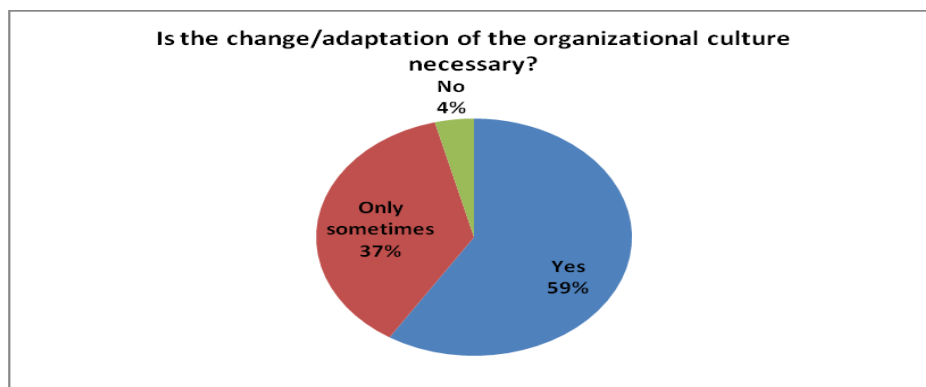
A Georgian analog of the theoretical discussion of whether the satisfaction leads to high performance or vice versa, is quite interesting. In the Georgian reality, 84,4% of the respondents think that a satisfied employee is a good performer, while 15,6% think that a good performer is a satisfied employee. Such results make it clear that the managers must try to make their employees feel job satisfaction if they are to work well and give desirable outcomes. When analyzing the common values, actions and assumptions at the organization, it may turn out that the company is a static and invariable unity. It is clear that many organizational cultures give much importance to the stability and control.

The world constantly changes and the companies must change with it. The best companies never stop, but introduce innovations day after day so that the innovations become a part of their activities. However, it is commonly known that no organization with diversified labor can create an ideal working environment for its employees. Consequently, any wrong action of a manager or wrong perception of the organizational culture by an employee may result in a conflict, or may lead to the stressful environment. Even the organizations with excellent management are not secured against conflicts or stressful situations. In case of such problems, the right ways of regulation must be chosen. There are several methods to regulate conflicts, such as holding meetings between the conflicting parties, their isolation between the different departments, calling the employees together to consider the problems jointly, etc. The results of the query evidence that the conflicts are resolved only at a sole discretion and solely in the personal interests of the managers, instead of using the above-mentioned methods. This means that such a decision will help achieve the organizational goals. In such a case, it is better to use the methods of management leading to the consolidation and summation up of the views, and the decisions are made on this basis.

When an employee is in a stressful environment, his/her health deteriorates, his/her emotional balance reduces and he/she experiences a chronic stress and inability what leads to the diminished labor productivity in the final run. On the other hand, the studies show that such losses cost a company a lot. Therefore, it is better to timely respond to the problems leading to the undesirable situations, solve the questions and manage the conflicts in order to avoid extra costs and nuisances. However, it should be noted that the solution of the concrete problems is not a goal of the conflict study, as it is only the onset of the problem to be solved. The principal goal is the conflict prevention and efficient management of stressful situations. Assessment of the motifs of the conflict is the most important moment of the conflict analysis. On the one hand, understanding the conflict motivations helps us to correctly collaborate with concrete subjects, while on the other hand, the identification of the motifs is an extremely difficult task. The problem is that the subjects of the conflict often conceal their motifs, or even cannot realize them. These problems can be solved based on a differential approach to the motifs of conflict. By using such an approach, one can identify several kinds of the major reasons for conflict with the following figures: resource limitation (21%), emotional attitude (37%), unfair compensation system (5%) and violation of democratic principles (15%). As the studies show, the payment scheme ranked the last.

During the study, we used both, closed-end and open questions, as with the open tests, the respondents is not limited only with the fixed number of options of answers, but is able to describe his/her position without any limitations. The results of the query evidenced that the purest reason for conflicts is emotional judgments and limitation of resources.

The study of the individuals' views about how they approach the necessity for the organizational culture changes, is no less important. The responses to this question were quite different making it difficult to identify a common view. Due to a number of reasons, it will be reasonable to present the answers as it is given on the Figure 2.



Source: Author's own compilation based on the materials of the research

Figure 2. The necessity of changes in organizational culture

As we can see, most respondents (59%) think that in response to the present-day requirements, the change/adaptation of the organization culture is necessary (Madu, 2012). 37% of the respondents (30 people) think that the change is necessary, but only rarely, as the values of the organizational culture, after set once, change very rarely and with long intervals. Only 4% of the respondents (3 people) think that no change of the organizational structure is ever necessary.

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The experience of the leading companies evidences that their culture allows for the changes in terms of maintaining the major ideological principles and stimulated the statement of complex tasks to help the company employees develop and the companies to progress.

Conclusions and Recommendations

First of all, attention must be paid to the establishment of a strong organizational culture and common values to bring them down to all employees. The members of an organization must be aware of the properties, priorities and meaningful aspects of their companies. They must be able to conceive the role of the organizational culture and make adequate evaluations. The employers must be informed about the degree of impact of the organizational culture on the company performance, kind of impact of each individual on the corporate culture and how the individuals or sub-groups contribute to the shaping of the organizational culture, its improvement or deterioration. Any organization wishes to achieve the level of the organizational ideology where the efforts, innovative skills and optimism of its employees are realized and achieve the balance both, between the different levels of the organizational culture and different elements of the same level of the organizational culture. Besides, in case of radical changes, the corporate culture must play the role of a catalyst of events to ensure the perfection of the processes of both, internal integration and external adaptation.

In order to make success on the background of globalization of the 21st century, the interaction between the people with different cultural, ethnic and religious values is necessary. Any limit or limitation is conventional in terms of market economy. Consequently, the organizations have to operate in a versatile environment and adapt themselves to catch up with changes. The companies must start to search for the inclusive ways of organizational management. Diversity management and value recognition are one of the means for a company to become competitive resulting in the HR satisfaction within the company and stimulating efficient performance. Culture fosters an organizational harmony among the employees and imaginations about the company; it is the source of stability giving the company employees the sense of security. At the same time, the awareness of the organizational culture helps new employees to integrate successfully with the events taking place at the company. Culture fosters high sense of responsibility among the employees, gives experience to them and helps recognize the creativity and merit of the company professionals. Success is depended on the leaders. If the new leader has been promoted from within, he or she will have some sense of the cultural issues that need to be dealt with. but if he/she should choose which way he will choose, destroy the existing, fight with it, give in or evolve. (Schein, 2009). Clearly, change leaders must commit themselves to well-reasoned, carefully planned, vigorous change management activities – including opportunities for staff members to practice new approaches in controlled settings – if behaviour, and eventually culture, are to be changed (Desson, Clouthier, 2010).

From the ethical values of an organizational culture, we thematically shifted to the following question – different kinds of diversity (ethnic, gender, geographical) and their influence on the organizational culture. Based on the gained results, we can conclude that a great majority of the population (75%, or 60 respondents) thinks that the mentioned kinds of diversity influence the organizational culture and impress the organization. The other part of the respondents (25%, or 20 people) state that the influence is not unilateral, but partial. It should be noted that none of the respondents deny the impact of the diversity on the organizational culture.

Clearly, these outcomes have a logical explanation. The problem of gender or ethnic discrimination is not so severe at the present-day Georgian companies. Consequently, the employees work in diversified environments being natural to them. In the *Comment* field, some respondents even tried to thoroughly explain this state of affairs: “Take religious attitude... For example, in high-mountainous Ajara, a guest can be served by a woman with a scarf on her head, and this is absolutely acceptable.”

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*CORPORATE SUSTAINABILITY IN THE TRANSITION TO SMART, EFFICIENT,
LOW CARBON ECONOMY IN EUROPEAN UNION*

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Abstract

Purpose of the article The purpose of this study is to emphasise the role of corporate sustainability in the transition process to smart and efficient economy. The main thesis can be expressed as follows: the present scope and methods used in the implementation of corporate social responsibility in European business is insufficient. In principle, it should cover the most significant aspects of company operation and its socio-environmental impact, as part of a broader, multi-level governance designed to support the transition to smart, efficient and low carbon economy called *sustainability transition*.

Methodology/methods In order to conduct the study, first an extensive review of the literature on the transition to smart and efficient, low carbon economy and events that occurred on the landscape and regime level was conducted. The framework's structure is based upon the multi-level perspective on socio-technical transitions created by F. Geels.

Scientific aim The purpose of this study is to identify the new role of corporate sustainability in the transition to smart, efficient low carbon economy.

Findings The present problems, both environmental (such as climatic changes, the loss of bio-diversity and depletion of natural resources) and social (mostly associated with steep inequalities in income distribution), present an enormous challenge to economic development. Those problems can only be faced by means of deep structural changes to the adopted production and consumption patterns. Changes of this scale can only be effected through concerted effort of various economic actors: companies, industry sectors, decision-makers, political powers, consumer groups, active civil societies, engineers, and scientists.

Conclusions The *sustainability transition* process has reached an unprecedented scale. Business entities gradually depart from the *business as usual* model of operation, looking for new business models (and thus introducing the idea of *corporate sustainability*).

Keywords: corporate sustainability, CSR, sustainability transition, low carbon economy, efficient economy

JEL Classification: Q56, M14

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Introduction

Smart, efficient and low carbon economy is high on the political agenda in European countries after the financial crisis. In the European Economic Recovery Plan was recognized that the crisis should also be taken as an opportunity to set our economy more firmly on the path to a low-carbon and resource-efficient economy. These challenges point to the need for more inclusive markers than just GDP growth. The new strategy called *Europe 2020* puts forward three mutually reinforcing priorities:

- Smart growth: developing an economy based on knowledge and innovation.
- Sustainable growth: promoting a more resource efficient, energy efficient, greener and more competitive economy.
- Inclusive growth: fostering a high-employment economy delivering social and territorial cohesion. (Europe 2020. A strategy for smart, sustainable and inclusive growth, 2010)

The motor of this strategy is sustainable growth which will help to decouple economic growth from the use of resources, support the shift towards a low carbon economy, increase the use of renewable energy sources, modernize our transport sector and promote energy efficiency. The crisis made us aware that "business as usual" is not possible anymore.

The strategy says that the present problems, both environmental (such as climatic changes, the loss of biodiversity and depletion of natural resources) and social (mostly associated with steep inequalities in income distribution), present an enormous challenge to economic development. Those problems can only be faced by means of deep structural changes to the adopted production and consumption patterns. Changes of this scale can only be effected through concerted effort of various economic actors: companies, industry sectors, decision-makers, political powers, consumer groups, active civil societies, engineers, and scientists. In effect, the postulated transition should be interpreted as a complex and prolonged process involving a multitude of areas and actors. (Geels, 2011)

In this sense, transition is a term used to describe conversion (evolution) from the existing model of economy towards one based on increased social and environmental responsibility. The new model should emphasise such elements as: green economy, low emission, resource efficiency, clean technologies, responsible consumption, social justice and equality (both inter- and intra-generational). Transition to smart, efficient, low carbon economy (called sustainability transition) in conventional reception is associated with the process of multi-level transformation of the economic and socio-technological system intended to increase its environmental sustainability and social fairness. This particular concept is typically evoked in the context of transition to green economy of low emission and resource efficiency, based on clean technologies and other solutions generally referred to as eco-innovation.

The purpose of this study is to emphasise the role of corporate sustainability in the *sustainability transition* process. The main thesis can be expressed as follows: the present scope and methods used in the implementation of corporate social responsibility in European business is insufficient. In principle, it should cover the most significant aspects of company operation and its socio-environmental impact, as part of a broader, multi-level governance designed to support the *sustainability transition*. The first section of this paper presents the most popular approaches to the problem at hand, as reported in professional literature. Section two presents characteristics of the various actors involved in the anticipated transformation of the economy. The third section discusses the changing roles and frameworks of company operations associated with the notion of corporate social responsibility or – in line with the recent trend – within the broader concept of *corporate sustainability*.

1 Interpretations of the *sustainability transition* concept

The influx of crisis symptoms and problems in the economic, environmental, social and political spheres has gained pace with the outburst of the latest global financial crisis. The most profound effect was the acceleration of fundamental systemic changes which – by their strongly voiced opposition to the existing system resulting in rapid generation of aggravated imbalance – naturally tends towards the *sustainability transition* (Loorbach i Huffenreuter, 2013)

The modern understanding (or even perception) of global problems has changed over the years: they are no longer approached as independent, plain and simple, or well-pronounced. On the contrary: the modern challenges are – more often than not – perceived from a broader perspective, as manifestations of a more complex and systemic process. (EEA, 2010)

The growing trend can also be found with respect to general awareness of the fact that some of the recent changes observed throughout Europe should be perceived as systemic risks or hazards, i.e. factors that are no longer contained within the narrow framework of individual problems, but pose a serious threat to the operation or the very existence of the entire system. Systemic risks may be triggered by certain events or evolve over time,

and their effects are typically grave, with potential to reach catastrophic dimensions. Some of the most pronounced risks are produced as consequence of protracted, long-drawn processes and only come into light when certain threshold values are breached. Consequently, it may take decades before the full extent of their damage can be recognised or anticipated. Until then, their potential impact upon the economy and the society tends to be downplayed or underestimated. Following are some of the examples of the present systemic risks: • climate change and the loss of biodiversity – these are interconnected, complex and typically of global scale; • imbalanced and unsustainable use of resources across various economic and social strata – these have the effect of limiting the ecosystem's ability to provide its services (such as waste absorption or the supply of production resources, water, breathable air, etc.); • environmental challenges – of more complex character, strongly correlated to other social problems, and resulting in an influx of uncertainty and risk.

The *sustainability transition* process has reached an unprecedented scale, with active involvement of a broad spectrum of stakeholders (business actors, the government, the consumers. One of its manifestations is the sizeable contribution on the part of international organisations and individual countries – their activities, undertaken in response to global crisis, come as part of much broader strategies of development and new policies, strongly rooted in the concepts of sustainable growth, green economy and clean production as the most effective remedies with potential to revitalise and sanitise the economy. Business entities gradually depart from the *business as usual* model of operation, looking for new business models (and thus introducing the idea of *corporate sustainability*). The above process can also be identified among consumers, as attested by the growing interest in such ideas as sustainable consumption and collaborative consumption.

To sum up, it may be observed that some of the processes which, up till recently, were only registered at the niche segments and peripheral areas of the economy, are gradually seeping to the mainstream, turning the brown economy of overabundance into a green economy of moderation and restraint. Some of the manifestations of this process include such phenomena as: the growing share of energy from renewable sources in total energy production, waste recycling, reduced greenhouse gas emission, of modern products and technologies with improved energy efficiency, sustainable transportation, sustainable supply chains, sustainable consumption, collaborative consumption, corporate social and environmental responsibility, and corporate sustainability.

The process of transformation that can be witnessed at present is - in its essence – a manifestation of structural changes. Research results and statistical data confirm the growing impact of green economy upon the GDP and employment rates, thus elevating its significance as a source of competitive advantage, a mark of sectoral development and a potent attractor for public and private investors. This is a new and very distinct trend. Observation and interpretation of structural changes associated with such concepts as green economy, green growth, green entrepreneurship and green employment are an important and current topic for in-depth studies. This is particularly evident in those areas where science meets politics. On the one hand, politicians voice their demand for broad and accurate analyses of the complex system of economy-society-environment. On the other hand, the scientific community requires political support and political experiences to facilitate the implementation of practical solutions and remedies.

As aptly observed by M. McIntosh, we are witness to several concurrent transformation processes at present: from high-emission to low-emission economy; from deep imbalance in income distribution to egalitarianism; from glaring practice of neglect for basic human rights towards communities formed on the sound fundamentals of social justice (M. McIntosh, 2013). On the other hand, I. Røpke suggests that the present changes are concentrated in two distinct areas, namely production and consumption, particularly the sociotechnic system of energy production and distribution, transportation system, and methods of food production (Røpke, 2013).

The intellectual insight into such complex interplay of diverse aspects of the present changes is severely limited by the strong compartmentalisation (if not fragmentation) of modern science and the associated reluctance on the part of many researchers to bear the intellectual risk of an interdisciplinary approach to the problems at hand. The more so that the phenomena observed at present are exceedingly complex and often burdened with unpredictability, thus adding to the complexity of their interpretation and understanding. It must be noted that the key notions evoked in the context of the present transition trend are: learning, adaptation, and transformation. Since the problems at hand are complex and not readily associated with distinct cause-effect relationships, the suggested approach is to keep on learning from one's actions, to observe, to adapt to changes as they come, and to accept the process of continuous transition. M. McIntosh in *The Necessary Transition* emphasises his strong conviction that the transition is a necessary stage, that it is already under way, and that it should be regarded as a positive trend, since it allows us to better address the present challenges faced by the world. (M. McIntosh, 2013)

There are three viable approaches to the *sustainability transition*: 1) a drastic reconstruction of the present capitalist model of economy, 2) a 'green' industrial revolution, and 3) a 'green' development Transformation towards a new model of economy may be approached not only through proper coordination and cooperation

between governmental institutions and international organisations, but also through cooperation between business entities and their stakeholders. The *sustainability transition* as such may be presented in a graphical form as a multi-level structure (Geels, 2011)

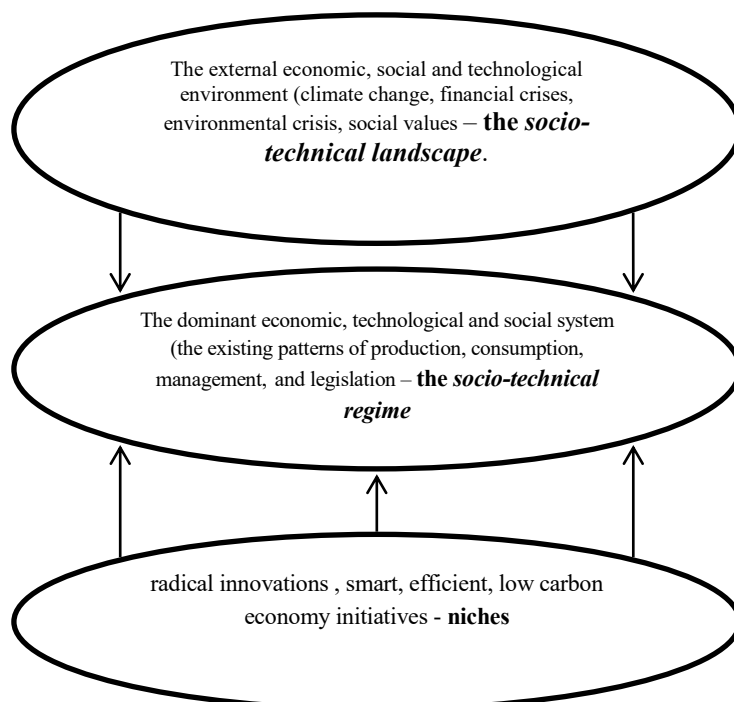


Figure 1. Transition to smart, efficient, low carbon economy from multilevel perspective (Geels, 2011)

The above approach is based on the assumption that the transformation is not a linear process but a joint effect of occurrences observed on three distinct levels:

- in *niches* – as areas associated with radical innovations;
- in the dominant economic, technological and social system (the existing patterns of production, consumption, management, and legislation – the *socio-technical regime*);
- in the external economic, social and technological environment (demographic trends, political ideologies, financial crises, social values, and macroeconomic principles – the *socio-technical landscape*).

The *sustainability transition* is an end result of all interactions that occur between processes on each of the above levels. In this view, niches are the environment involved in the initiation of changes with potential to accelerate changes in the dominant system, while processes observed in the external surrounding exert pressure upon the system. Destabilisation of the dominant system, in turn, forms windows of opportunity for further innovations generated at niche level. (Geels, 2011).

The *sustainability transition* imposes a number of changes: limitation of economic scale – both for production and consumption; departure from the imperative (or dogma) of economic growth; limitation of social inequalities (both in national and global perspective); reduction of macroeconomic instabilities and imbalances; adaptation of public institutions to the requirements of new economy (free from the constraints of strong reliance on fossil fuels), depletion of natural resources, and degradation of the natural environment. As such, it represents a change towards local economies, with less complexity, and with potential to stimulate social involvement in small-scale, local, grassroots projects. (Røpke, 2013)

2 The enterprises and other actors of transition to smart, efficient low carbon economy

The transition we discuss in this paper is a conglomerate of processes occurring in parallel in the spheres of economy, technology, politics, and civil societies. The above processes stimulate the involvement of many actors – those can be segregated into the following groups: state authorities (governments), decision makers, and local self-governmental bodies; enterprises; consumers and non-governmental organisations (civil society).

Each of the above groups plays their specific role in the transition processes, using their specific sets of resources and other instruments, as adequate for the task at hand (Røpke, 2013).

It seems that the first of the above groups of actors plays the most decisive role in the processes at hand, at least in the initiation of changes. After all, the political decision makers, in cooperation with scientific communities, were the ones to initiate the process of diagnosing the present crisis situation. Governments and international organisations are the obvious proponents of any strategies, policies and remedial measures designed to address the challenges associated with the systemic crises. They are also responsible for construing the sets of financial instruments intended to stimulate the economy by offering incentives for entrepreneurs. The state and other public bodies take up a new role in the task of addressing the complex tangle of economic, social and environmental problems: they are expected to formulate strategic objectives and institutional frameworks in support of the transition, and serve as intermediaries for cooperation between governments, business entities, and societies.

So far, the involvement of state authorities and international organisations has had the effect of producing a number of important documents postulating viable directions of economic changes, formulated in the years 2009–2013: the *Global Green New Deal* – a G20 report; the OECD report *Towards Green Growth*; the EU strategy of development *Europe 2020*. (Europe 2020. A strategy for smart, sustainable and inclusive growth, 2010) One of the common features prominent in all of the above diagnostic and strategic documents is the postulated design scheme for a global concept of 'green' new deal, 'green' economy, or 'green' growth.

The enterprise sector, in turn, is involved in the realisation of the concept of social and environmental responsibility, designed to reduce the negative impact of the sector upon the natural environment and the society at large. These actors are involved in the introduction of new, clean technologies and Eco-Management and Audit Schemes (EMAS) in support of environmental innovations. Recent years have brought an increased interest in the concept of *Corporate Sustainability* to broaden the scope of the existing Corporate Social Responsibility and to better address the challenges of the *sustainability transition*, as discussed herein.

The last group of actors – consumers and non-governmental organisations – is involved in the task of changing the existing cognitive and behavioural patterns through education, information campaigns, and grassroots pressure upon decision makers. The growing awareness of the consumer base will result in increased demand for environmental goods and services, to the effect of stimulating greater involvement of business entities in the task of changing the existing production and supply of these products.

3 The Failure and Future of CSR

The issue of corporate social responsibility (CSR) is now widely discussed in the literature. CSR is defined in a narrow and a broad way. According to the first understanding CSR takes into account social, environmental and ethical risks in order to protect and increase the value of the company to the shareholders. (Davis i Blomstrom, 1975) (Certo i Certo, 2006) The author of the wider definition, is Carroll (Carroll, 1979). According to him *the corporate social responsibility covers the economic, legal and philanthropic society's expectations to the company*. Particularly useful for the paper are the definitions of the CSR based on the concept of stakeholders. Every company coexists in the local environment with other participants of social life and is facing some expectation especially after the last financial crisis. B. Rok writes: "Facing challenges of the severe recent economic crisis leaders of largest companies, as well as representatives of leading research centers, search ways of further development which includes the expectations of the various groups of stakeholders in the process of creating value in the rapidly changing environment" (Rok, 2010).

To understand the current issues around CSR we will focus on: first -failure of CSR after financial crisis, second - EU policy to strengthen the role of CSR in sustainability transition and the third - new standard in reporting CSR which is ISO 26000.

Existing concept of the CSR is criticized in the context of the global financial crisis. W. Visser writes *CSR, as a business, governance and ethics system, has failed. This assumes that success or failure is measured in terms of the net impact (positive or negative) of business on society and the environment*. (Visser, 2012)

Most companies listed in the rankings of CSR have played a leading role in extremely unethical creating risky financial instruments sold to clients in an aggressive attitude, the privatization of profits and for polling costs of their activities. The failure of the idea of corporate social responsibility in companies have several reasons: CSR has remained largely restricted to the largest companies, and mostly confined to PR, or other departments, rather than being integrated across the business; CSR has adopted the quality management model, which results in incremental improvements that do not match the scale and urgency of the problems CSR does not always make economic sense, as the short-term markets still reward companies that externalise their costs to society.

Visser proposes a new concept of the responsibility of companies, which is called CSR 2.0 or Corporate Sustainability and Responsibility. This new approach acknowledges that 'sustainability' (with roots in the environmental movement) and 'responsibility' (with roots in the social activist movement) are really the two main games in town (Visser, 2012). This is the adequate approach in the "Age of Responsibility", and is searching for a new, sustainable and responsible development. CSR 2.0 means moving away from philanthropic activities, sponsorship of events, integration meetings and build the image of the company, and the move to create a strategy for limiting the negative impact on the environment and the social environment, to invest in responsible projects, for example. "clean" technologies and energy-saving products

Second important aspect which influence future of CSR is the European strategy for the transformation of the smart, efficient, low carbon economy. Strategy emphasize the role of CSR as an institutional project, which seeks to regulate the business impacts on stakeholders. The European Union has adopted in October 2011, a new strategy in the field of corporate social responsibility (*EU strategy 2011-2014 for Corporate Social Responsibility*). This document highlights the impact of CSR on six key factors in the competitiveness of businesses: reduce costs, human resource management, customer relationships, innovation, risk management, and financial results. The recommendations of the strategy say that implementation of the principles of CSR requires the collection and disclosure of information on socially and environmentally responsible business activities. The next step is Directive 2014/95/EU (called CSR directive) of The European Parliament and Of The Council. It regards to disclosure of non-financial and diversity information . The law applies to publicly traded companies with more than 500 employees. They must address "policies, risks and results" in relation to "social, environmental and human rights impact, diversity and anti-corruption policies" in their annual reports. . The European Union is a world leader in the disclosure of non-financial information. Today, 2,500 companies voluntarily produce sustainability reports; that will rise to nearly 7,000 by 2017, when the law goes into effect.

CSR is moving from charitable actions supporting various social and environmental events through donations and sponsorships, to effective management strategy of the enterprise which contributes to increasing the competitiveness of the company, build reputation and at the same time shaping favorable conditions for social and economic development. This process is supported by ISO standard 26000 establishing new areas of corporate social responsibility activities: *Organizational governance* – practicing accountability and transparency at all levels of your organization; *Human rights* – treating all individuals with respect; making special efforts to help people from vulnerable groups; *Labor practices* – providing just, safe and healthy conditions for workers; *Environment*– identifying and improving environmental impacts of your operations; *Fair operating practices* – respecting the law; practicing accountability and fairness in your dealings with other businesses; *Consumer issues* – providing healthy and safe products, promoting sustainable consumption; *Community involvement and development* – getting involved in the betterment of the local communities that your organization operates in. ISO 26000 proposes, a broader definition of CSR, which which means the responsibility of the organization for the impact of its decisions and activities on society and the environment. The commitments of CSR companies must take into account the expectations of stakeholders, must align with the law and international codes of conduct, and be integrated with the activities of the organization (International Organization for Standardization, 2011)

Three main trends presented above point out new significant role of CSR in the ongoing transition to smart, efficient economy.

4 Discussion

The transition to smart, efficient, low carbon economy is complex problem. Strategy Europe 2020 is shaping most of regulation, policies and financial frameworks of EU. Flagship programs of the strategy emphasizes smart growth, innovations and knowledge based economy, also resource efficient, renewable energy, low actions in industry and agriculture. To understand ongoing transition better we applied the multilevel perspective and actor analysis approach. In this context Corporate Sustainability is a part of process, together with public regulation and policies also awareness and action taken by consumers and civil society. We can observe growing importance of sustainability issues in business (Laszlo, 2008, Jackson, 2009, Vision 2050, 2010) and process of redirecting corporate and public finance to sustainability transition (UNEP, 2015).

According to Visser: sustainability and responsibility can be thought of as different, yet complementary elements of CSR. Hence, sustainability can be conceived as the destination—the challenges, vision, strategy and goals, i.e. what we are aiming for; while responsibility is more about the journey—our solutions, responses, management and actions, i.e. how we get there. (Wiser, 2011).

Although the multilevel perspective is perceived to have a number of limitations (Geels, 2011), it provides a useful framework for a structured discussion of the way, in which copartition activities contribute to transitions to smart and efficient economy. More empirically grounded research could explore in more depth how ongoing

multilevel transition and their actors, specially enterprises implementing CSR 2.0, might influence dynamics of the process.

5 Conclusion

Based upon the analytical framework chosen (see Fig. 1), major challenges of multilevel transition has been recognized. The *sustainability transition* process has reached an unprecedented scale (planetary, global, local) and involved many actors (international organizations, EU, national and local governments, enterprises, civil society, universities). Financial crisis 2008 was a turning point for EU strategy, recovery programs and policies. The crisis made us aware that "business as usual" is not possible anymore.

Business entities gradually depart from the *business as usual* model of operation, looking for new business models (and thus introducing the idea of *corporate sustainability*). Corporation that adopt significant aspect of CSR (according to ISO 26000) can align with changes in niches (innovation, new technologies) and landscape level (climate change, low carbon green economy). The presence of sufficient pressure of governments and consumers at the regime and landscape level is a necessary. State authorities play significant role as a rule setter, agent of change and leverage for action taken by business. For example the influence of regulatory policy of EU about corporate responsibility seems be effective.

To conclude I use words written by Mike Townsend, in his newest book *The Quiet Revolution: We are in a new era. The systems, rules and behaviours that led to business success in the 21st century are no longer working. Since the onset of the longest and deepest financial crisis in living memory, capitalism is still suffering a crisis of liquidity, reliability and confidence. There is a huge question mark over whether our economic system will allow us to make the necessary transition to a more sustainable world or whether we are locked into a fatal collision course.* (Townsend, 2016).

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NON-FINANCIAL INDICATORS IN CZECH COMPANIES

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Abstract

Purpose of the article The success of companies is primarily focused on the long-term growth of its value. The scale changes over time, the profits are gradually getting to the generalized use of the EVA. Firm measures such as ROA and ROE are a prerequisite for the creation of EVA. Inputs of the most widely used measures are of financial nature. Experts warn that the hard scales can be used to evaluate the past, but even non-financial indicators should be addressed (Pollak, 2004). Definitions of non-financial indicators are not as consistent and accurate as financial measures that are now compatible worldwide. Likewise, the influence of individual non-financial parameters of success of the company is very hard to measure. This is often the reason for their neglect. The article deals with monitoring the non-financial indicators in the Czech manufacturing companies of medium size.

Methodology/methods The research is focused on the communication between companies and the public, which is based on annual reports, and they are monitoring the non financial information. In the Czech Republic there is a valid legislation that defines the work and subsequent regulations, which recommend how to structure the companies' annual reports. As part of the orientation on CSR European Commission (European Commission, 2016b) recommends a reference to the annual reports they give an assessment of non-financial indicators and the interests of stakeholders. The present research compiled annual reports of 100 selected Czech companies for the year 2014. Companies were selected so that it was not in the company's results did not show extreme dominance on the market - the sample consisted of medium firms, successful, transparent and mainly active in manufacturing. 12 areas have been identified for evaluation and monitoring by the scale of the extent to which the annual report mentions the aspect. The data were processed using descriptive statistics. We set the rate of including various aspects of corporate monitoring and presentation and subsequent mutual respect by the correlation coefficient.

Scientific aim The aim of the study was to determine the extent to which Czech companies work with non-financial indicators, especially those oriented stakeholders. A secondary aim was to determine how prepared they are to reflect the renovation of recommendations of the annual report by the European Commission, which will come into force in 2017. We observed that non-financial aspects in their annual reports are elaborated now.

Findings Companies are taking the annual report as a document necessary or a form of publicity, a way to publish product information, history and basic business activities. Companies must disclose the date of the financial statements, but some indicators based on them publish only 57% of firms. From stakeholder groups to report the most engaged employees - 67% of reports about them speak more than just superficially. Also mentioned are strongly oriented tactical plans for the immediate future. From the research it can be stated that Czech companies still do not pay more distant stakeholders and distant future, sufficient attention. Document annual reports are used more as an internal message than as a product of public relations.

Conclusions Research has confirmed that Czech companies have created a sufficiently strong network of public relations outside the company, even in the nearest vicinity of corporate stakeholders. Results are limited to a selected sample of companies, but also a source of information - the companies do not pay attention to the annual report document.

Keywords: financial results, annual report, non-financial indicators, stakeholders, the future of the company

JEL Classification: M14, M21

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Introduction

An important prerequisite for the future success of the company is monitoring, measurement and management activities under indicators that the firm considers important. It usually uses indicators of financial analysis, but this is only a narrow view of financial performance. A large part of companies operating within their KPIs and nonfinancial indicators, but rather focuses on measurable indicators (such as market share and its development). The content of this article is not a specific definition used by non-financial indicators, but keeping track of whether and to what extent the selected companies present their perception of the importance of non-financial areas that affect their future equally (or more) as the next generation of financial management assumptions declared financial results.

Non-financial assumptions are both internal, which could be included in product quality and its further development, insufficient capital, capable management and a well-educated and motivated employees - and all this in quality process management. External prerequisites for success is the continuous monitoring of customers and markets, as well as cooperation with other stakeholders and the wider environment company.

1 Measuring the success of the company

Financial indicators are performance-driven, based on accurate numbers. Even this accuracy is limited, as shown by (Klečka, Čámská, 2015) for differences in the value of the indicators depending on the standards according to which company charges and thus counts indicators. Corporate success is measured in terms of the past only. Good state firms built on previous successful development is one of the prerequisites for success in the future, but it is not a single condition nor sufficient. If the company wants to build long-term prosperity it must exploit market potential and itself to seek or create new opportunities. Ongoing work to improve their competitiveness is a necessary condition for survival (Porter, 1998).

The definition of assumptions is not easy competitiveness, current financial performance belongs to them, but it is only one of many assumptions. Other assumptions can (Nečadová, Soukup, 2013) be divided into quantitative (price, cost, market share, productivity) and qualitative (research and development and application of results, personnel policy, doctrine). The condition is not only creating value for the shareholder, but its share for stakeholders (Neumaierová, Neumaier, 2012). This implies a need to monitor as well as customers, suppliers, as well as the satisfaction of the public and state administration, which affects the company's image.

Without monitoring internal and external growth assumptions and the valuation of the company, the company runs the risk that its success will not last long. It is necessary to devote optimization within the company but also to issues of retention and growth - innovation, research, markets, customers, employees, workers, etc. Moving from a financial perspective for non-within the Performance Management induce the formation of a number of systems for measuring performance. Performance Measurement System (PMS) can be define (Neely, 1999) as a balanced and dynamic system that supports decision-making processes in the enterprise. PMS concept of balance is secured by the inclusion of various indicators and thus offers a holistic approach to managing all components of the organization. The concept of dynamism is then secured by monitoring and the adaptation of business goals and priorities. The main attributes of the performance of these systems include the ability to absorb corporate strategy and balance other factors.

The prerequisites of successful companies were studied by (Pollak, 2004), when reviewing the vitality of companies with 10 criteria (they have a different weight), of which only two were of financial nature (cash flow - interest rate and structure of capital resources), others focus on the future and stakeholders (for more details tab. 1).

The Foundation for Performance Management recommends using a range of non-financial indicators (Shaw, 1999) are grouped into five groups based on production and product, Sales and Marketing, Human Resources Management, likes and internal environment. What is missing is a greater focus on cooperation with the wider enterprise environment. The most quoted and probably most widely used model is the Balanced Scorecard (Kaplan, R. S. Norton, D. P., 2000). This model is based on the transformation of the company's strategy to set verifiable indicators that cover all areas of the company. Balanced Scorecard concept, according to its authors, consists of four dimensions. In addition to the financial aspects of this concept encourages the monitoring indicators within the next three perspectives: customer, internal business process perspective and learning and growth. All four perspectives are interconnected system of causal relationships with direct connection to business strategy.

In the Czech Republic, then was carried out an extensive research (Štamfestová, 2014), when they were asked about the company on a variety of soft features, which the author grouped into 10 categories - financial and market performance, production quality and customer satisfaction, information technology, innovation, education, satisfaction and motivation and company image.

Trying to pick up the company's image often produces inconsistent results in terms of CSR. Overall, businesses accessing the corporate philanthropy more purposefully. Basic preference is derived from the need to achieve basic financial and economic business objectives. The corporate philanthropy is always a part of the marketing strategy. The goal of the corporate philanthropy is to improve the image of the company. (Boukal, Špička, 2014).

According to the EFQM (Šulák, Vacík, 2005) it is possible to define also the monitoring of non-financial indicators in groups generally called Leadership, Strategy, Human Resource Management, Internal processes, Partners (Suppliers) Customers, Staffs, Corporate Social Responsibility, Performance, Education and improving the.

The common principle of all the models underpinning the widest range of factors that determine the value of the company, capturing their links to business performance and the ability to measure the performance.

Table 1 summarizes the above criteria according to the above-cited various approaches.

Table 1 Criteria of company successful

Vacík, Šulák (2005)	Pollak (2004)	Shaw (1999)	Kaplan, Norton (2000)	Štamfestová (2015)
Leadership	Cash flow/ interest	Manufacturing process	Financial	Quality
Strategy	Structure of finance	Sales&Marketing	Customer/Stakeholder	Financial performance
Internal processes	Stakeholders	Human resources	Internal Processes	Market performance
HR management	Customers	R&D	Organizational Capacity	Customer satisfaction
Partnership	Product	Company environment		Information Technology
Customers	Market research			Innovativeness
Employees	People development			Qualification of staffs
Social responsibility	Suppliers			Satisfaction of staffs
Efficiency	Location			Motivation of staffs
Education and learning	Environment			Company image

Source: according to sources in the head of the table

2 Annual report

The Annual Report is a document that gives information about the development of the Company's fiscal year. The company informed through an annual report on the financial condition, business and results of operations for the past financial year and on the future outlook for the financial situation, business activities and expected results. The annual report is a marketing communication tool, through which the company presents its goals, philosophy and contemporary communication theme. A well-crafted annual report helps build the company's image, increases its credibility and strengthens its market position.

Annual reports are required to complete by those companies that must have audited financial statements. According to the Act no. 563/1991 Coll. a joint stock company is a company that compulsorily generates equity capital and in the previous year, with two of the three following criteria: the amount of their balance sheet amounted to more than CZK 40 mil., Net sales amounted to more than 80 million CZK. average amount of employees over 50 people.

Companies which must issue an annual report, have called. Obligation to provide information that is required by law. These companies are required to prepare an annual report, the purpose of which is the aforementioned laws decreed that have a coherent, balanced and comprehensive report on the progress of their performance, activity and current economic status.

The purpose of the annual report is to present a comprehensive, balanced and complete information on the development of performance, activity and current economic position of the company. Since the text of the law is rather general, it is also general in its interpretation. Besides the general description of what the annual report describing the Accounting Act gives yet another specific area, which is contained in the annual report of financial and non-financial Expression.

Explicitly lists the following points:

- Facts that occurred after the balance sheet date and are important for fulfilling the purpose of the annual report (ie have an effect on performance, activity and current economic status)
- Expected development entity
- Activities in research and development
- Activities in the field of environmental protection and labor relations
- Information on the enterprise organizational unit abroad if it is established
- Objectives and risk management (pricing, credit, ...) of the company, etc.

The Company may mention in the annual report other information, such as:

- Introduction by the CEO, chairman
- Information on the activities of the company with regard to its activities;
- Information on the company's donation, etc.

All the aforementioned points that the annual report must contain, should lead to allow users of financial statements and annual report enough information to judge for themselves to what extent the company is financially healthy and how to lead the market. What is important is the mention that it also contains data on non-financial terms - ie to describe the condition, which is in the financial statements expressed only financially and notes to the financial statements are designed to expand these data to more detailed financial breakdown.

Free delineation of responsibilities leads to a situation where the companies' own discretion in annual reports includes information about less rather than more. Research (Kašparová, Kunz, 2013) shows that in the non-financial criteria only companies pay attention to information directly related to the economic reality. However, companies have their own limits, both in collaboration with stakeholders, environmental and social.

The European Commission has prepared a directive (European Commission, 2016a), which from 2017 recommends: "Large public-interest entities (listed companies, banks, insurance undertakings and other companies that are so designated by Member States) with more than 500 employees should disclose in their management report relevant and useful information on their policies, main risks and outcomes relating to at least

- environmental matters,
- social and employee aspects,
- respect for human rights,
- anticorruption and bribery issues, and
- diversity in their board of directors.

There is significant flexibility for companies to disclose relevant information (including reporting in a separate report), as well as they may rely on international, European or national guidelines (e.g. the UN Global Compact, the OECD Guidelines for Multinational Enterprises, ISO 26000, etc.)"

This directive will cover Large public-interest entities sheet, which now can prepare for the new guideline, but we wonder how to build reporting companies which are not going to be directly affected by the Directive. Even so, it can be assumed that companies in the Czech Republic will resign points Respect for human rights, because it is automatically assumed. On the contrary, "Their diversity in board of directors" is a problem whose solution can not be expected in the very near future, Czech society is very patchy and rather dismissive of artificial setups of advantages for women. Mentions of diversity are seen as artificial intervention in the internal affairs of the company.

3 Results

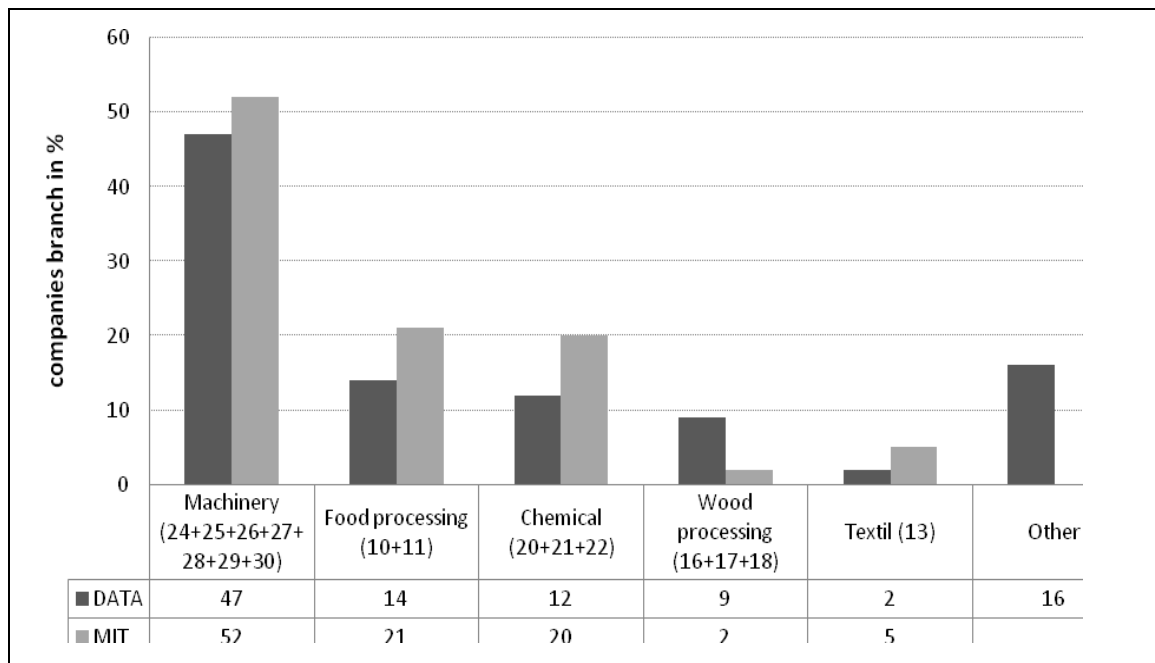
Research aim was to determine how to behave in company reports, without being under pressure - whether at the market of risk or legislation. We are also interested in the company with its own product (not commercial) sample consists of manufacturing firms manufacturing industry, a high proportion of companies have engineering, chemical and food related firms.

The basic restrictions in selecting companies were:

- Medium Enterprise 50- 500 employees
- Manufacturing company,
- In the last five years had significant financial problems (since 2012 ROA > 0)
- Transparency - the company had published full financial statements at least since 2012,
- In 2014 released the annual report.

The aim of the selection was to obtain annual reports of successful medium-sized companies, which have their own production. We analyzed the annual reports for 2014, a period in economic terms is relatively quiet. Year 2014 can be in terms of macroeconomic parameters and results of the companies in the industry is perceived as an economic stimulus (MIT, 2015).

In the survey sample were 100 firms, selected on the basis of the above criteria. Inclusion in the sector can be seen in Fig. 1, the numbers for the type of company correspond with the numbers by CZ-NACE. At the beginning of the selection was to fully respect the structure of the manufacturing industry in the Czech Republic, ie. To the selection of the company's key sectors. The statistical data (MIT, 2015) show that in terms of turnover, the dominant sector of food processing, the structure of the industry is very loaded but companies that do not own production, as well as foreign-owned firms and firms that are part of the de facto monopoly. That was the reason for giving preference to (in terms of number of companies) industry machinery. In the chemical industry, the number has narrowed since because the high capital intensity in industry sales affected the production of several large companies.



Source: own processing

Figure 1 Companies in branches

On the basis of previous researches were selected and monitored the following aspects:

- Financial indicators
- Comments on the plan performance
- View for next year
- Long-term strategy
- Research and Development
- Market development
- Customer satisfaction
- Relations with suppliers
- Human Resources
- Sponsorship and donation
- Local community and work with it

Evaluation was carried out by scaling when the criteria mentioned in any part of the text scored on a scale of 0-5 according to the rules in the table. 2.

Evaluation showed that most companies are consistently engage in annual reports two aspects - a view of the next year and care for human resources. In connection with the information that mostly by smaller businesses located in the regions (90% of the companies were based outside Prague), it is clear that companies expect their annual reports to not serve the general public, but primarily it will be read by their own employees, therefore, they turn mainly on their interests - outlook for the near future and concern for human resources.

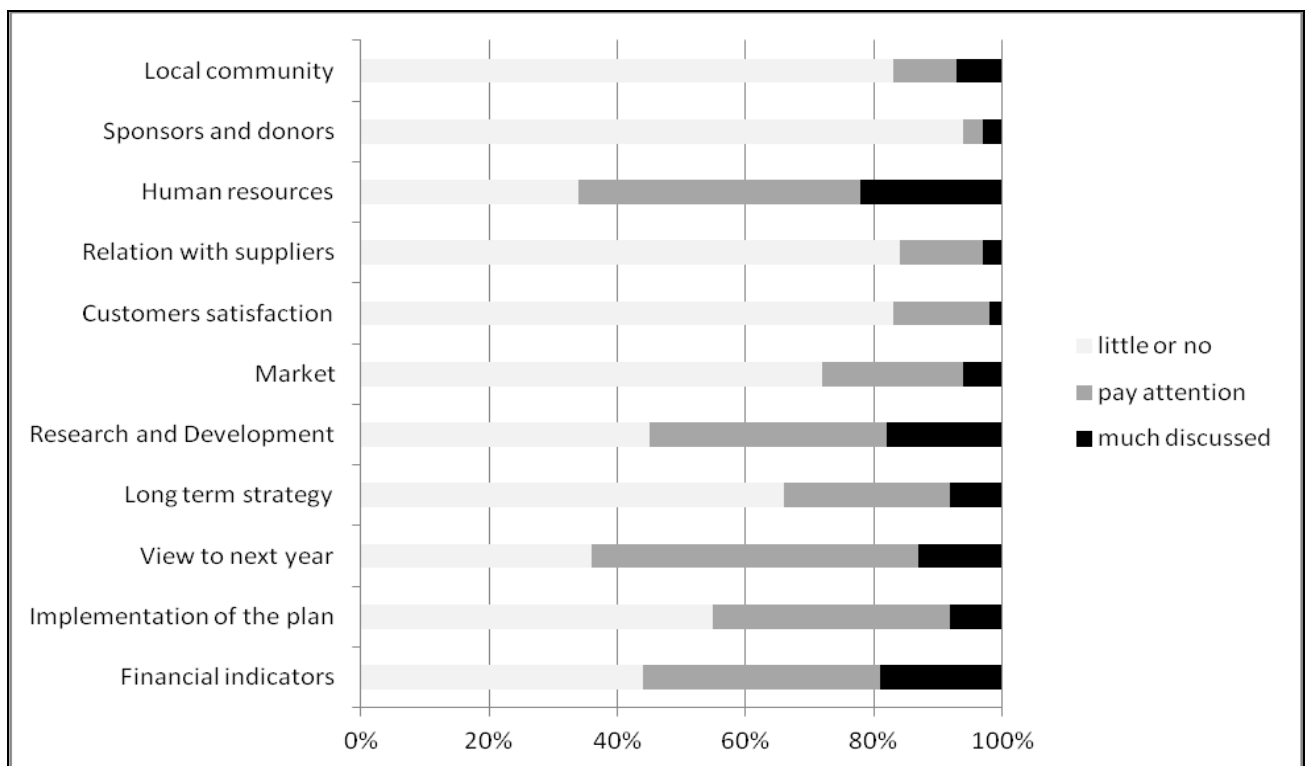
The evaluation results in coarse scaling can be seen in fig. 2.

Table 2 Rating occurrence - an explanation of scaling

scale	evaluation	Description	gross ratings
0	it is not	is no mention of it	
1	not enough	aspect is only mentioned	or even no relationship with the company
2	marginally	aspect is developed	
3	significantly	aspect is perceived in links	aspect is elaborated and mentioned in links
4	consistently	aspect is perceived and evaluated	
5	complexly	aspect isa complex perception and includes evaluation and planning	aspect is comprehensively evaluated

Source: own

Very little attention is paid in annual reports to social relations - both sponsorship and donations, and collaboration with the local community, at least it solves almost 20% of firms.



Source: own processing

Figure 2 Non-financial aspects in the annual reports

On the contrary, most comprehensive in addition to human ressource are the solutions to financial indicators and research and development. The reasons are varied - with financial indicators, it will be the ease in creating output, but also an effort to comply with the law - Risk management can document monitoring of indicators of financial analysis. More extensive information on research and development was mainly attributable to a direct

request to monitor the area in the Czech Accounting Act, part 3, § 20, but also technically oriented sample of companies and actual implementation of research and development (CAA, 1991).

If we examine the surveyed companies and the aforementioned aspects in interrelated links using a correlation coefficient used for a more detailed scale, we get more interesting connections. (Correlation coefficients are generally lower because of the range of 6 degrees we have a small sample of companies). The highest degree of correlation (0.57) we see between supplier relations and customer satisfaction. We can infer from that, that these are the production companies and perceive the strength of the value chain, where you must pay attention to the inputs and outputs of production factors. Overall, a positive framework completes the fact that both of these factors (suppliers, customers) correlate strongly with the setting and emphasizing long-term strategy of the company. It suggests that successful medium-sized production companies (and especially in the region), which is ultimately the backbone of the economy, work well with the future in mind - perceived by stakeholders and provide long-term decision-making framework.

An important role has a production factor of human resources (see fig 2), interest is indeed weak but negative correlation with the outlook for the next year. It means that many companies are devoted to the annual report of either one or the other, in other words - human resources, companies pay, but sometimes it confuses the outlook for next year.

Table 3 Correlation between the criteria

	FI	NY	LTS	RD	M	CS	RS	HR	SD	PR
Financial indicators	0,19	0,15	0,37	0,10	0,46	0,34	0,21	0,08	0,28	0,28
Implementation of the plan		0,21	0,25	0,10	0,31	0,19	0,31	0,05	0,36	0,00
View to next year			0,27	0,31	0,22	0,08	0,26	-0,21	0,15	0,23
Long term strategy				0,13	0,23	0,45	0,50	0,00	0,18	0,26
Research and Development					0,07	-0,07	0,07	0,03	0,18	0,06
Market						0,32	0,03	0,11	0,29	0,08
Customers satisfaction							0,57	0,21	0,28	0,23
Relation with suppliers								0,06	0,15	0,28
Human resources									0,15	0,06
Sponsors and donors										0,32

Source: own

Fig. 2 shows the low level of cooperation with indirectly bound stakeholders - NGOs and the local community. It should be emphasized that it is not only donations, but also about the possible non-cooperation. The question is whether low levels that have been included in the annual reports have also given their focus on employees. The management of the company may then assume that their employees as key stakeholders would be very sensitive to the division of funds outside the company.

4 Discussion

It seems that there is not a good state of Czech companies in the area of non-financial indicators. It should however be noted that there is a gap between what the company does and what it presents. When we monitored medium sized businesses of the productive nature, these companies were more focused on their own work than on its presentation and they would need to be investigated further to find out where the gap is on the line of "the real activity of the enterprise - Focus on non-financial assumptions - presentations focus on non-financial assumptions ". Greater interest group of employees may be the result of post-crisis knowledge of companies whose employees are a valuable capital (Čámská, 2012). The second reason may be the fact that management companies perceive employees as an important group of readers of the annual report, and therefore they pay attention. It is questionable whether Annual Reports are designed to communicate with employees or the company would have to use other tools of internal communication (Holá, 2011). The third reason for crowding the interests of stakeholders likely to be distant one hand, limited resources and environmental phase of the companies investigated, as well as an underestimation of the annual report as a document or instrument of marketing communication companies. Further investigation in this area should focus on the relationship of

genuine cooperation with stakeholders and its presentation. It can be expected that just a group of medium-sized companies in this space will be because it undervalues the importance of certain statements in the annual report.

Conclusion

Not only financial conditions are what is needed for the successful growth of companies. Non-financial assumptions are obvious, but often there are no parameters to their measurability. It is in the interest of companies to monitor non-financial indicators, because they are oriented to the future and can cover a broader perception of the potential (opportunity) of companies. Future earnings are not created by optimizing internal processes, but the attitude of stakeholders to the company and its products, markets willingness to cooperate. Considerable impact this has on the company's image. Czech companies are legally defined by obligations of reporting annual reports. For monitoring whether companies work with non-financial indicators oriented to the future, we selected a group of 100 manufacturing companies, where the basic requirement of transparency (ie, the companies' willingness not to conceal) the inclusion of medium-sized companies and the fact that the company had recent problems with management. In the evaluation of the annual reports of these companies, we came to the conclusion that companies in the monitoring of non-financial indicators are mainly near future (term plan for the next year) and internal stakeholders ie. Employees (see fig. 2). Directing the company in the long term (strategy) then correlated (see Tab. 3) monitoring customer satisfaction and relationships with Suppliers, a direct line with the long-term economic benefit. Companies should not underestimate the cooperation with distant stakeholders such as local community activities unrelated to the company of eventually non profit organizations is an important part of her image.

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**SECTION 5
GLOBAL ECONOMY AND COMPETITIVENESS OF NATIONS**

*INVESTMENT IN TECHNOLOGY, FOREIGN DIRECT INVESTMENT AND
COUNTRY IMAGE: WHAT IS THE RELATION?*

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Abstract

Purpose of the article A number of previous studies have analysed different aspects of country image and foreign direct investment (FDI) or FDI and investments. However, there is a lack of sufficient studies that investigate how the factors of country image, FDI and investment in technology are related to each other, or the country image is related to investment in technology. Thus the purpose of the paper is to analyse theoretically and to test empirically the interaction of country image, FDI and investment in technology.

Methodology/methods The relation between investment in technology, FDI and country image is analysed using constructive research approach by applying systematic review, analysis, deduction and other methods. The strength of the relation between investment in technology, FDI and country image indicators is evaluated using correlation method. The theoretical literature and empirical studies are analysed. Moreover, the theoretical method is created for the evaluation of this relation and tested by empirical study.

Scientific aim The aim of the paper is to determine and to evaluate the relation between investment in technology, FDI and country image.

Findings According the results of empirical study, the correlation between FDI and investment in technology is stronger than between FDI and country image, investment in technology and country image. Furthermore, country image have stronger relation with investment in technology than with FDI.

Conclusions On the basis of the scientific literature review it could be concluded, that any country has to define the desired country image and change the current image to the desired. The amount of FDI should be strongly influenced by the country image. Creation of desirable country image could be beneficial instrument for attracting investors with innovative technologies and technological knowledge. Moreover, the opinion of foreign investors should affect FDI inflow, which also has the impact for economic growth and changes of country image.

Keywords: country image, investment, foreign direct investment, technology.

JEL Classification: O33, O39, O140

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Introduction

In the modern economies global trade, new technologies and exchange of technological knowledge ensure the long-term economic growth and wealth creation. According to Kotler, Haider and Rein (1993), countries are creating complex marketing strategies in order to have competitive markets, to focus on specific customers, to seek the public resources would be adequate to needs and wishes of customers.

Country image is the “result” of country’s marketing. The changes of country image are determined by the country's marketing strategy – how potential foreign investors and visitors is/get acquainted with the country, its people and services, developed/developing products. The country is like a target market with its prices, personnel and infrastructure. Undoubtedly, these factors have an impact on foreign investors’ decision to select a country for creating or developing its business, or to look for another country. However, the risk is the most important factor for investors, which is influenced by the country's political and legal environment, culture and traditions, level of technology.

Various researchers (Ram, Zhang, 2001; Bisat et al., 1996; Pegkas, 2015) agree that FDI is one of the key factors of economic development. Moreover, the more foreign capital is attracted by the country, the more abroad innovative technologies reach the country and the more technological knowledge is acquired. Thus, FDI is concerned not only with the country’s technologies, but also influences the country's technological progress and is a source of investment in technology.

In the scientific literature the aspects of the country image and FDI, FDI and investment in technology are analysed. But there is no analysis, how the factors of country image, FDI and investment in technology are related to each other, or the country image is related to investment in technology.

To find out whether the country image, decisions of foreign investors and investment in technology are directly related, the theoretical aspects of country image, FDI and investment in technology should be analysed. Also, the paper will aim to find out whether the changes of country image have an impact to FDI and investment in technology.

The research problem is formulated as a question: what is the relation between country image, FDI and investment in technology?

The main purpose of the paper is to determine and to evaluate the relation between investment in technology, FDI and country image. For the implementation of this goal, the theoretical literature and empirical studies, related to the determination and evaluation of this relation, should be analysed. Also, empirical study should be done for the assessment of the relation between factors in selected countries.

The first part of the paper presents the literature review of definitions and processes, and the theoretical analysis of different empirical studies. The second part introduces created method for estimation of the relation between country image, FDI and investment in technology. The relation between country image, FDI and investment in technology is analysed using constructive research approach by applying systematic review, analysis, deduction and other methods. The strength of the linear relation between selected factors is evaluated using correlation method. The results of empirical study are presented in the third part of the paper. The fourth part introduces the discussion aspects of the research.

1 Literature review

The aim of the literature review is to overview the scientific publications and empirical studies, also to select definitions, processes and indexes related to country image, FDI and investment in technology.

The analysis of the country image definition lets to distinguish three main groups of research studies in which different objects of country image are researched: the country image, product-country image/country of origin image and the product image. According to Roth and Diamantopoulos (2009), the country image is defined as the whole knowledge and/or emotions, feelings of the country. Desbordes (1990), Allred, Chakraborty and Miller (1999) distinguish the knowledge factor as a basic element. They argue that the country image is the whole of products’ images together with economic conditions and political maturity, historical events and international relations, culture and traditions, technological development and the level of industrialization. Whereas, Askegaard and Ger (1998) and Verlegh (2001) focus on the emotional component of the country image - experience of the feelings and emotions for a particular country. Meanwhile Martin and Eroglu (1993) and Kotler et al. (1993) used both mentioned components for definitions of country image. So, country image is defined by Martin and Eroglu (1993) as “the total of all descriptive, inferential and informational beliefs one has about a particular country”. According to the place image’s definition of Kotler et al. (1993), country image can be defined as “the sum of beliefs and impressions people hold about” countries. In analysis of the relation between

country image, FDI and investment in technology, country image is estimated as “the sum of beliefs and impressions people hold about” (Kotler et al., 1993) specific country.

Moreover, the literature review related to country image studies (e.g. Martin and Eroglu, 1993; Verlegh and Steenkamp, 1999; Allred et al., 1999; Jin et al., 2015) shows that country image is analysed by various aspects and has connection with economic level, intensity of international trade, products made by a country and users of these products. The research of country of origin image is more popular and includes a broader context for the country image studies. The country of origin image's connection with trading decisions is researched globally by Dimitrovic and Vida (2010), Kaynak and Kara (2002), Papadopoulos and Heslop (1993), Roth and Romeo (1992) and Roth and Diamantopoulos (2009). Analysing the relation between country image and FDI, the opinion of products' consumers is important as well as the opinion of target groups about a country. The country image has an impact to investors' willingness to invest, but also the company image and image of its products determines decision to invest. The opinion of residents/visitors about the country and its products is important, since the use of products depends on it and affects the investor's success.

In the international market the country image is influenced and reflected by international organizations and media-published measures such as economic and social indicators or ratings. Countries are ranked by The World Bank, economic research organizations such as the Heritage and the Wall Street Journal, the World Economic Forum, the international rating agency Standard & Poor's, economic journals as Foreign Direct Investment.

International ratings and indexes have an impact for country image and changes of FDI. It is reported in scientific and economic publications and by various organizations that The Anholt-GfK Roper Nation Brands Index, the Index of Economic Freedom and the rank of “Doing Business” are recognized as reliable instruments for the assessment of economy, business conditions, economic freedom or country image. These indexes and ratings are used for a long period, are regularly reviewed and improved every year. So they can be used for the evaluation of the relation between country image, FDI and investment in technology.

The literature review of FDI factor shows that FDI flows from developed countries into less-developed ones. According to Hubert and Pain (2002), FDI can have another tendency - investment into countries with a similar level of development, culture and traditions. Investors get acquainted to a country, thus reducing the investment risk.

Usually, the research object of scientific research reviewed is the relation of FDI and economic growth. Various authors analyze the factors of the level of development, technology transfer, human capital and its influence to the correlation of FDI and economic growth (De Gregorio, 1992; Bisat et al., 2002; Pegkas, 2015). Research shows that in many cases there is a strong positive or very strong linear correlation between FDI and economic growth. In some studies the causes of FDI flows, FDI forms and the distribution between countries are analysed.

A literature review suggests that FDI determinants and relationship to the economy, the marketing of a country and its culture (Wells and Wint, 1990; Yilmaz, Tag, Ozkan and Degirmen, 2014), the quality analysis of country's products (Weng, Yang and Tu, 2010) is a research object. FDI inflow and development strategy influence the rate of economic growth and technological progress in a country (Ram, Zhang, 2001; Gholam Lee, Heshmati, 2005). New technologies and technological knowledge transferred from foreign countries (in the form of FDI) give a greater impetus to the economic growth than inward investment in technology.

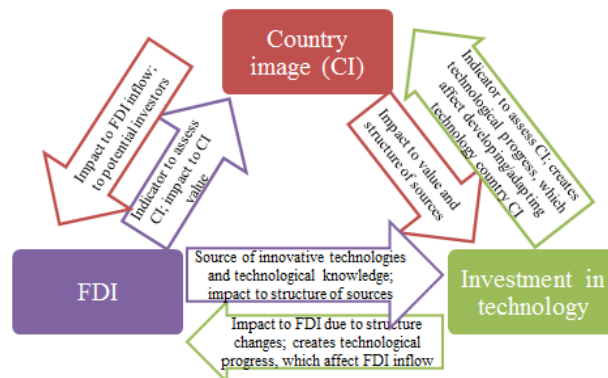
Theme of investment in technology is relevant in the scientific field and journalists' publications (Simpson, 2015; The Daily Reckoning, MarketWatch 2015). The benefit of investment in technology, the time for investment and investment sources are analysed. It is stated that investment in technology has a significant return, so this investment is attractive, but risky.

According to Barrell and Pain (1997), FDI is crucial for economic growth and job creation. In addition, FDI is largely concentrated for new technologies transfer between countries. Barrell and Pain (1997) study showed that the more technologically advanced small countries tend to invest in foreign countries. In addition, the country's economic performance and fiscal policy have an impact on the time of FDI. It is observed that under the less favorable investment conditions, it is a lower level of FDI.

Therefore, the interaction of FDI and technological knowledge and/or technological progress is analysed in scientific literature, but the factor of investment in technology is not an object of studies. But, investment in technology has an influence on technological progress, i.e. technological progress is the result of investment in technology. So, it is appropriate to make analysis of the interaction between FDI and investment in technology.

In general, investment in technology is a source to create the technological progress due to developed or adapted technological processes, products or knowledge. It can be argued that it is efficient to invest in technology creation for financially strong and economically developed countries. Financially unstable and less-developed countries can gain benefit from existing technologies. In manufacturing and service industry, the effective use of technological progress determines economic growth, social changes and wealth creation. As mentioned above, economic and social factors, technological level, the country's products (which are influenced

by technological progress of a country) are the determinants of country image. In addition, the degree of political maturity, historical events and international relationships, culture and tradition, emotions of subjects towards the country have influence on the country image. Thus, the opinion of foreign investors should affect FDI flows, which also has the impact for economic growth and changes of country image (see Picture 1).



Source: made by authors

Picture 1 The conceptual framework of country image, FDI and investment in technology

However, the factors of country image, FDI and investment in technology may interact differently due to different economic processes and political forces. In order to verify the relation of these factors, the empirical study is carried out for the assessment of the relation between country image, FDI and investment in technology.

2 The method for evaluation of the relation between country image, FDI and investment in technology

For the implementation of the research goal, the factors of country image, FDI and investment in technology should be assessed and its influence to each other should be estimated. According this, the theoretical assumptions (placed in Picture 1) are used for creation of the method, which could evaluate the relation between country image, FDI and investment in technology. In order to assess the relation between selected factors, it should be noted that:

- FDI and investment in technology can be used as indicators to assess country image.
- Country image and investment in technology can affect FDI inflow and the number of potential investors.
- FDI structure of a country and its forecasts can change country image.
- Country image and FDI inflow may affect domestic and foreign investment in technology and the structure of sources of investment in technology.
- Investment in technology creates technological progress, which may affect the country image as a developing/adapting technology country, and change FDI inflow.
- FDI is a source of foreign innovative technologies and technological knowledge.

The methods of comparative and systematic analysis are used to evaluate the relation between country image, FDI and investment in technology. The linear relation between the pairs of selected variables is evaluated by measuring linear correlation coefficients using Microsoft Excel. The value of correlation coefficient is in the range [-1; 1] and could be classified as follows in the Table 1.

Table 1 The scale of values of correlation coefficient

Very strong	Strong	Medium	Weak	Very weak	No connection	Very weak	Weak	Medium	Strong	Very strong
-1	(-1; -0,7]	(-0,7; -0,5]	(-0,5; -0,2]	(-0,2; 0)	0	(0; 0,2)	[0,2; 0,5)	[0,5; 0,7)	[0,7; 1)	1

Source: made by authors

If correlation coefficient is equal to 1, there is very strong linear relation between variables. When correlation coefficient is equal to -1, the linear relation between variables is very strong but inversely proportional. If correlation coefficient is equal to 0, there is no linear relation between analysed variables. When the correlation

coefficient is + 0.7 and over, and from -0.7 and up – 1, the relation between analysed variables is considered strong.

After the correlation of variables' pairs is estimated, comparison method is used for analysis of correlation results. According the correlation results, the analysis of correlation of each country variables' pair is done. Also, correlation results of different countries and groups of countries are analysed using comparison method. On the basis of analysis results, conclusions are constructed about the impact of country image for FDI inflow and the amount of investment in technology, how FDI is influenced by investment in technology and country image, and how FDI and country image influence investment in technology.

Moreover, indicators were selected for the research to measure the variables. The indicators were selected on the basis of the review of empirical studies. So, investment in technology is measured by expenditure for research and development (R&D). Country image is measured by two indicators - the rank of "Doing Business" and the Index of Economic Freedom. The rank of „Doing Business" is chosen, because there is empirical evidence of its relation to FDI. The Index of Economic Freedom is used for analysis due to its measurement technics, and then the variables of economic growth (also FDI inflow) are measured. The Anholt-GfK Roper Nation Brands Index (Anholt, 2008; 2009) has the same logical structure as the definition of country image in this paper. But on the basis of selected method for empirical study, the Anholt-GfK Roper Nation Brands Index could not be used due to the number of index values for one selected country. Moreover, country image is measured using two indicators, because differences of the linear correlation could be evaluated and the reasons of differences could be stated. Other indicators are represented in Table 2.

Table 2 Variables, indicators and sources of data

Variable	Indicator	Source
Country image1	The rank of "Doing Business"	The World Bank (2015)
Country image2	Index of economic freedom	The Heritage (2015)
FDI	FDI inflow (current US dollars, \$)	The World Bank (2015)
Investment in technology	R&D expenditure (current US dollars, \$)	The World Bank (2015), EUROSTAT (2015).

Source: made by authors

The statistical data was used from 1990 to 2014 years for empirical study. The United States dollar was selected as currency for analysis. The period of the research and the countries were selected according to availability of statistical information, the welfare level, economic growth data and on the basis of research results of Banionienė and Valančienė (2014). Selected countries are classified into three groups according to level of income and investment in technology. USA, Japan and Germany are selected as the leaders by the amount of investment in technology and producing the most technological progress in the world. China, Mexico, Israel, Poland and Singapore is selected due to the success of investment in technology used for creating technology progress. Romania, Lithuania, Ireland and Bulgaria is selected for analysis, because economic changes have a huge impact for the amount of investment in technology in these countries, but the correlation between GDP and technological progress is weak.

3 Results of the empirical study

The empirical study for evaluation of the relation between country image, FDI and investment in technology is done by analysing the indicators of selected countries. The relation between the selected indicators is determined by applying mathematical correlation method. Because of a large sample of research and statistical data, estimated strength of the relation between indicators is ranged according Table 1. By using comparative approach method the correlation results is analysed in each country, in different groups of countries and between countries. The strength of the relation between pairs of these variables is analysed: the rank of „Doing Business"(DBR) and the Index of Economic Freedom (EFI), DBR and R&D, DBR and FDI, EFI and R&D, EFI and FDI, R&D and FDI. The correlation results between pairs of variables are represented in Table 3.

The evaluation results of the relation between country image and FDI. Indicators of country image are DBR and EFI. According to theoretical assumptions, then DBR is smaller (country gets the higher place in the list), country image is improved and these changes should have a positive impact for FDI. Also, then EFI is increasing, country image is improved and FDI should be growing. So, there should be inversely proportional relation between DBR and FDI, and linear relation between EFI and FDI, if FDI is growing due to improved country image. If DBR and EFI have the same impact to FDI, then there should be inversely proportional

relation between DBR and EFI. According to correlation results (see in Table 3), inversely proportional relation between DBR and EFI is in 7 countries from 12 selected countries.

The results of DBR and FDI correlation analysis shows, that the strength of relation is inversely proportional and medium only in the USA and Mexico. Weak inversely proportional relation between the indicators is in Japan, China, Bulgaria, Lithuania and Romania (see in Table 3).

Table 3 The correlation results between pairs of variables

Country	DBR and ELI	DBR and FDI	ELI and FDI	DBR and R&D	ELI and R&D	R&D and FDI
Japan	-0,6239	-0,4033	-0,0436	0,0844	0,1816	0,5319
USA	-0,6336	-0,5196	0,2429	0,4455	0,6250	0,7379
Germany	-0,3028	-0,0994	-0,1659	-0,3433	0,6710	0,4418
Israel	0,6568	-0,1091	0,2961	0,7840	0,4725	0,7309
China	0,4501	-0,4860	-0,4170	-0,5054	-0,3750	0,9796
Poland	-0,9050	0,8355	-0,1419	-0,8215	0,5823	0,5684
Mexico	-0,5261	-0,5180	0,5707	-0,2481	0,8214	0,7286
Singapore	0,1985	-0,1812	0,2214	-0,7408	0,0778	0,7717
Ireland	-0,7579	0,3301	0,4949	-0,2860	0,6220	0,7429
Bulgaria	0,3757	-0,3275	0,5126	0,1552	0,7976	0,2624
Lithuania	-0,5069	-0,3294	0,4240	0,5284	0,7996	0,5179
Romania	0,2454	-0,4193	0,4204	-0,1780	0,8202	0,4804
Japan	-0,6239	-0,4033	-0,0436	0,0844	0,1816	0,5319

Source: made by authors

In Germany, Israel and Singapore the linear correlation between DBR and FDI is very weak and inversely proportional. In Poland the strength of the relation is very strong, because DBR jumped up 29 positions from 2006 till 2014 while FDI strongly decreased from 2007 till 2013. The weak linear correlation between DBR and EFI is in Ireland due to the lower position of DBR. However, DBR position of Ireland decreased because of changes of other countries images. Therefore, in order to avoid valuation inaccuracies, it is appropriate to use the value „Doing Business” index, but not DBR. However, the values „Doing Business” index are not used in the study for lack of statistical information.

In addition, then country image is changing due to changes of economic freedom, there is weak and very weak relation between EFI and FDI in the leading countries (USA, Japan, Germany) and growing economies (such as Israel, Singapore and Poland). But this relation is medium in the modest countries (Bulgaria, Lithuania and Romania) by investment in technology. In China the relation between variables is inversely proportional and equal to 0,42. This phenomenon cannot be explained by the influence of negative country image (e.g., "made in China" has a negative meaning), thought EFI is decreasing. Despite ELI decline, FDI inflow is growing fast and is the largest in analysed countries. So, in China FDI growth should be interpreted as a benefit of low cost country and huge economic that compensates the impact of negative country image.

The evaluation results of the relation between country image and investment in technology. According the results of correlation, the correlation is stronger between indicators of country image and investment in technology than between country image and FDI in many countries.

The analysis of DBR and R&D correlation results shows that very weak relation is in Japan, Bulgaria and Romania, and weak relation is in USA, Germany, Mexico and Ireland. China and Lithuania has a moderate relation between the variables, and strong relation is in Israel, Poland and Singapore. These results indicate that in selected growing economies R&D rate changes closely related to the country image as the suitable place for business. In summary, it can be said that the changes of country image (as suitable place for business) are more concerned with R&D than FDI.

Moreover, the place of DBR is increasing and the value of R&D is strongly growing in Japan and Israel. It can be stated, that these countries try not to lose positions in the group of countries as suitable places for business and invest more in R&D for this reason.

Evaluation results of ELI and R&D relation shows that a strong relation between the indicators is in Mexico, Bulgaria, Lithuania and Romania. These countries are moderate investors in technology and tend to adapt technologies, rather than create ones. Mean correlation is measured in Ireland, Poland, Germany and USA. Japan, Singapore and Israel have lower than average relation between variables. Only in China ELI and R&D correlation is inversely proportionate due to the fastest growing R&D indicator then economic freedom remains almost constant through the analysis period.

The evaluation results of the relation between FDI and investment in technology. According to the correlation results between R&D and FDI, the relation between investment in technology and FDI is strong in the USA, Israel, China, Mexico, Singapore and Ireland (see Table 3). The strength is from 0.72 to 0.78, with the exception of China, where the relation between R&D and FDI indicators is 0.98. In Japan, Poland and Lithuania the correlation between R&D and FDI indicators is medium. Weak correlation between analysed indicators is in Germany, Bulgaria and Romania, where R&D indicator is rising, but FDI inflow is unstable. In addition, after the economic crisis in 2008, Bulgaria's and Romania's FDI inflow fell almost 3 times and varies slightly.

4 Discussion

According to the evaluation results, economically strong countries with positive country image, the country image's improving activities could not be as effective for increasing FDI inflow as in smaller weaker economies.

The country image (as a free economy) has influence for the changes of investment in technology. Vice versa, the growing indicator of investment in technology helps to create a positive country image. The results indicated no significant differences between groups of countries, dividing them into leaders, growing economies and moderate investors. However, in selected growing economies the changes of investment in technology are closely related to the changes of country image as suitable place for business.

In addition, constantly growing investments in technology help to attract potential foreign investors. The results of empirical study suggest that a strong relation between investment in technology and FDI is in countries where the strategy of investment in technology is active. These countries are able to take advantage of foreign technological progress for the inside economic development.

The results of empirical study show, that the relation between FDI and investment in technology has been stronger than the relation between these indicators and country image in analysed countries. Moreover, the changes of country image are more concerned with investment in technology than to FDI.

The evaluation results of relation between selected variables show that the DBR could have a negative impact on the reliability of the analysis results. There is no possibility to eliminate the influence of a particular country image to the country image of other country. In the future, it is appropriate to use the value of „Doing Business” index (which is published from 2014) for the country image's evaluation. Nevertheless, in the empirical study DBR values are scattered enough to be able to draw conclusions about the relation between country image, FDI and investment in technology in the selected countries.

Conclusion

On the basis of the scientific literature review it could be concluded, that any country has to define the desired country image and change the current image to the desired. The amount of FDI should be strongly influenced by the country image. Creation of desirable country image could be beneficial instrument for attracting investors with innovative technologies and technological knowledge. According to the scientific literature, investment in technology helps to create the technological progress due to developed or adapted technological processes, products or knowledge. The efficient use of technological progress is the key factor for economic growth, social changes and wealth creation in a country.

Meanwhile, the economic and social conditions, the technological level, innovation of products are the determinants of the country image as well as the degree of political maturity, historical events and international relationships, culture and tradition, emotions of subjects towards the country. Thus, the opinion of foreign investors should affect FDI flows, which also has the impact for economic growth and changes of country image.

It could be stated that there is a relation between the indicators of country image, FDI and investment in technology. In order to have a deeper analysis, each indicator could be compared by countries or groups of countries. However, the trends of the indicators can only be compared while analysing the results by countries. The comparison is not appropriate in absolute numbers, because the countries vary by size and level of development. In order to compare absolute numbers of indicators, population and/or gross domestic product

should be included in the study. So, the ratio of population and/or gross domestic product with the selected indicators let to have a more accurate evaluation of the relation between country image, investment in technology and FDI.

The findings would be more reliable if more countries as leaders, modest investors and fast-growing economies are included in the empirical study. Moreover, selected fast-growing economies may have influenced the scatter of the empirical study's results, because the analysis shows the exceptional influence of various economic and political factors to fast-growing country's indicators.

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*IMPLEMENTATION OF EUROPE 2020 STRATEGY - THE TAXONOMIC
ANALYSIS*

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Abstract

Purpose of the article The article concerns the implementation of the Europe 2020 Strategy. The main aim was to analyse the spatial diversity of countries in terms of the degree of implementation of the strategy and the progress that countries have made in this regard. An attempt was made to assess the relative developmental disparities between countries.

Methodology/methods The methods of multivariate statistical analysis were applied. To assess the degree of implementation of the strategy a dynamic version of Hellwig's synthetic variable method was used. The analysis of the disparities between countries was made with a dynamic measure of the relative taxonomy, proposed by Wydymus.

Scientific aim The scientific aim was to evaluate the progress made by countries in implementing the objectives of the strategy and the relative developmental disparities between Member States with particular attention to the countries that joined the EU in 2004.

Findings The study confirmed the strong differentiation of EU Member States. The majority of countries that joined the Community in 2004, has made significant progress and reduced the disparities compared to others. The countries, political leaders of EU (Germany, France, Great Britain, and Italy) have achieved rather disappointing results.

Conclusions Most of the countries made significant progress in achieving specific objectives such as increasing investment in R & D, reducing greenhouse gas emissions, increase the use of renewable energy and reducing the number of young people do not continue education. The biggest problem remains the fight against poverty and social exclusion. The evaluation of the progress made by individual EU members can not only help to identify good practices, but also to prevent making the same mistakes. The results of the study can be used by the European Commission as well as the institutions and authorities of the different countries of the Community to evaluate the progress made and to take appropriate actions.

Keywords: Europe 2020 strategy, multivariate analysis, Hellwig's synthetic variable method, relative taxonomy

JEL Classification: O52, E61, C00

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Introduction

In 2000, the EU approved the so-called Lisbon Strategy, whose aim was to transform the Community into the most competitive and dynamic economy in the world, based on knowledge, capable of sustainable economic growth with more and better jobs and greater social cohesion (see: European Parliament, 2000). However, at the halfway point of the plan it turned out that the realization of its objectives has become very difficult, and the goals, for various reasons, unrealistic (see: High Level Group ..., 2004). In addition, the economic crises in 2008-2009 highlighted the need for reform and determined the development priorities of the Community in the long run. Responding to these challenges, in 2010 the European Union adopted a new strategy. The aim of Europe 2020 Strategy is smart growth of the Community towards an economy based on knowledge and innovations; sustainable growth consisting in promoting a more resource efficient, greener and more competitive economy; inclusive growth that relies on fostering a high-employment economy delivering social and territorial cohesion (European Commission, 2010). The strategy identifies five main objectives of the EU, which guide the action of the Member States and the EU in terms of promoting employment, improving the conditions for innovation, research and development, reaching the objectives of climate change and energy, improving education levels and promoting social inclusion, in particular through the poverty reduction (Domańska 2010). The main targets of the Europe 2020 Strategy are:

- increase the employment rate of people aged 20-64 to 75%,
- 3% of EU's GDP for investment in research and development,
- the achievement of the objectives of "20/20/20" climate and energy - reducing greenhouse gas emissions by 20% compared to 1990, increasing to 20% the share of renewable energy in overall energy consumption and increase energy efficiency by 20%,
- improving education levels by reducing the share of early school leavers to below 10% and increase to at least 40% the percentage of people aged 30-34 with a university degree or equivalent,
- poverty reduction by decreasing the number of people at poverty at risk at least by 20 million.

The implementation of the main targets identified in the strategy and national targets set by the Member States is monitored by the Europe 2020 indicators collected by Eurostat.

The article concerns the implementation of the Europe 2020 Strategy. The main aim of the study was to analyse the spatial diversity of countries in terms of the degree of implementation of the strategy and above all the progress that countries have made in this regard. An attempt was made to assess the relative developmental disparities between countries in the implementation of the strategy. Special consideration was paid to countries of the biggest enlargement of EU, i.e., the countries that joined the Community in 2004.

The study covers the years 2005-2014 and refers to 28 countries members of EU. However due to the lack of the data Croatia was excluded from the analysis till 2010 year. The study was carried out on the basis of synthetic measures. The synthetic variables were calculated on the values of Europe 2020 indicators. During their construction all the indicators were considered equally valid.

In order to consider the different ways of assessing the situation in individual countries three types of synthetic measures were created. At the beginning, according to the idea proposed by S. Wydymus (2013), for each country (and each year) the situation of the country with respect to all the others was analysed. It allowed obtaining the relative synthetic evaluation of the development of individual EU countries in terms of main aspects described in the strategy. At the next steps the approach proposed by Z. Hellwig (1968) was applied. The Hellwig's method consists in the introduction of a hypothetical object (pattern) with the best values of all diagnostic variables achieved by countries. In this approach the synthetic measure of development is formed on the basis of the distance between the object and the pattern. This approach was applied in two ways. At first the values of Europe 2020 indicators were adopted as the diagnostic variables. In the next step, in order to create the determinants the national targets were used. The study allowed evaluating the progress that countries have made in the implementation of the strategy in the subsequent years of the analysis. In addition, the synthetic measures allowed creating the appropriate rankings of countries.

1 Methods of research

Collected by Eurostat the Europe 2020 indicators constituted the basis for assessing the level of implementation of the strategy. In the study, every single indicator was denoted as x_{ijt} , where i - number of the country, j - variable, t - year. Since the level of fulfilment of objectives is described with wide set of indicators it should be considered as a complex phenomenon. In that case, comparing countries requires the use of methods of multidimensional comparative analysis (Panek and Zwierzchowski, 2013). In the study two methods were used: a dynamic measure of the relative taxonomy developed by Wydymus and Hellwig's synthetic variable

method in dynamic version. The relative taxonomy method is discussed, inter alia, by Wydymus (2013), Lira (2015), and Lira et al. (2014). The synthetic measure of development method is described in the literature, among others, by Hellwig (1968), Grabiński et al. (1989) and in English by Olczyk (2014).

1.1 *Wydymus dynamic measure of the relative taxonomy*

The method consists of constructing relative synthetic measures. Since among the diagnostic variables both benefit and negative variables can be found at the first step all the determinants are converted into stimulants. Then the values of individual variables for each object and each time period are relativized according to the formula:

$$d_{(l/i)jt} = x_{jt}/x_{ijt} \quad (1)$$

The value of index d higher than 1 informs about the relative advantages of the country l over the country i . All relative indices d constitute a matrix D that shows the relation between the pairs of objects in respect of all individual variables in subsequent years. The synthetic, quantitative assessment of the level of development of the country, including all the considered aspects, presenting the situation of the country in relation to all others is obtained on the basis of the matrix D^* calculated in accordance with the formula:

$$D^*_{jt} = \begin{bmatrix} 0 & & \frac{1}{k-1} \\ & \ddots & \\ \frac{1}{k-1} & & 0 \end{bmatrix} \cdot \begin{bmatrix} 1 & d_{(2/1)jt} & \cdots & d_{(k/1)jt} \\ d_{(1/2)jt} & 1 & \cdots & d_{(k/2)jt} \\ \vdots & \vdots & \ddots & \vdots \\ d_{(1/k)jt} & d_{(2/k)jt} & \cdots & 1 \end{bmatrix} \quad (2)$$

Diagonal elements of this matrix (denoted as w_{ij} , $i=1, \dots, k$) are the basis for the construction of relative taxonomic measures:

$$W_{it} = \frac{1}{m} \sum_{j=1}^m \frac{1}{w_{ijt}} \quad (3)$$

In case of countries with similar level of development the value of the measure is close to 1. The values of W_{it} smaller than 1 signify relative advantage of the country i over the others in period t . The lower value of the measure W_{it} the better is the situation of the country i over the others.

1.2 *Hellwig's synthetic variable method*

Hellwig measure of development is a synthetic variable created due to aggregation of diagnostic variables that describe the investigated phenomenon. To make this process possible all the determinants were standardized. Due to the dynamic nature of the analysis, for the normalization process, the averages and standard deviations of variables were calculated on the basis of observations for all objects throughout the study period.

Then a pattern, i.e. a hypothetical object with maximum values of variables in the case of stimulant and minimum for destimulants was constructed. Just as it was during standardisation, the values of the variables for the pattern were set on the basis of observations for all objects throughout the study period (Zeliaś, 2000).

In the next step, the Euclidean distances of the countries to the pattern were calculated. Upon the value of the distances Hellwig's measure of development was created. The measure was constructed in accordance with the formula:

$$H_{it} = 1 - \frac{d_{it0}}{d_{t0} - 2s_{t0}} \quad (4)$$

where d_{it0} is the Euclidean distance of the country i to the pattern, d_{t0} means the average distance of the countries to the pattern in the year t , and s_{t0} is the standard deviation of the distance of the countries to the pattern in the year t .

The values of the synthetic measure, obtained according to the formula no. 3, mostly belong to the closed interval $[0; 1]$. Its higher values mean the higher level of development of the country in the terms of the analysed complex phenomenon.

The applied research methods made it possible to assess the level of implementation of the strategy in the terms of the Europe 2020 indicators. An individual situation of each country in this regard was evaluated with Hellwig's measure of development. The use of relative taxonomy method enabled to estimate the relative disparities between countries. In both cases, dynamic approach allowed for assessment of the progress that countries have made in the considered period.

2 Empirical material

The study was carried out with the use of Europe 2020 indicators, collected by Eurostat (Eurostat (a)). There were 4 stimulants (S) and 5 destimulants (D):

- X1 - the employment rate of people aged 20-64 in total (% of population) – S,
- X2 - expenditure on R & D (% of GDP) – S,
- X3 - greenhouse gas emissions (base year 1990) – D,
- X4 - the share of energy from renewable sources (%) – S,
- X5 - primary energy consumption in million tons of oil equivalent to 100 thousand population – D,
- X6 - early leavers from education and training (% of population aged 18-24) – D,
- X7 - people with higher education aged 30-34 years (%) – S,
- X8 - people at risk of poverty or social exclusion (% of population) – D,
- X9 - people living in households with very low work intensity (% of population below 60 years of age) – D.

Two other indicators available in Eurostat base have been omitted because of the strong correlation with the others.

The whole period of the study was divided into two sub-periods: 2005-2009 - before the announcement of the strategy and 2010-2014 - the period of its implementation. The results for the sub-periods are not comparable because the data for Croatia have been available only since 2010. In the first five-year period the situation of only 27 countries was examined.

The data on strategic objectives for the individual countries and the levels of their fulfilment that were used in the last study were gathered from the annex to the Europe 2020 Strategy (Eurostat (b)) and from reports worked out each year by countries (Eurostat (c)). Since the individual targets were specified only in case of the indicators X1-X8 the last analysis was limited only to them. Due to the specific formula of individual targets in some countries, the analysis was able to be carried out only for year 2014. In case the target for the country was not specified, it was estimated on the basis of a common goal for the entire Union.

3 Results of the study

At the first stage of the study the degree of implementation of the Europe 2020 strategy was evaluated in accordance with the idea of relative taxonomy. The situation of individual countries was assessed with respect to all other members of the Union in the subsequent years. The values of the synthetic measure (denoted W) and the rankings of countries are presented in table no.1. The tendency of changes between the beginning and the end of the subperiod is shown in column labelled as trend. The higher value of the measure the lower level of development of the country in relation to the others. Bold lines indicate the countries that joined the EU in 2004.

In the first subperiod the countries for which the relative measure has decreased slightly predominate. However, it not always takes effect into improving the rankings. For example, the situation of Belgium in relation to all EU countries improved slightly, but there were several countries that develop faster and overtook her in the standings.

In the second five-year period the countries where the situation has deteriorated predominate considerably. The weak position of Malta is particularly evident. In the first period the value of its measure is several times higher than the measure of the best country. In the second five-year period, due to a substantial increase in the share of energy from renewable sources, the value of the measure firmly declining, however, it is still considerably higher than in other countries. The leaders in term of strategy fulfilment are Sweden, Slovenia and Denmark. These countries have occupied leading positions in the rankings. However, in the second period the measures for these countries increased slightly, suggesting that their advantage over other countries in the EU begins to wane.

The analysis of the situation of the countries that joined the EU in 2004 has revealed the strong heterogeneity of the group. There are countries as Slovenia and Lithuania with the high level of development in terms of the fulfilment of the strategy and the countries as Malta and Cyprus where the level is very low. However, the situation most of them has improved in the first investigated subperiod. In this group Poland stands out with the improvement of both the value of the measure and the ranking position. The analysis can be elaborated by considering the relative indices that show the relation between the pairs of objects in respect of all individual variables in subsequent years.

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Table 1 The relative measures of the Europe 2020 strategy implementation

country	measure W in subperiod 2005-2009					trend	rankings					trend
Austria	0,77	0,80	0,81	0,84	0,81	down	5	7	8	8	8	up
Belgium	1,00	0,98	0,96	0,96	0,94	up	17	14	13	14	14	down
Bulgaria	1,23	1,24	1,28	1,11	1,07	up	26	26	26	24	24	up
Cyprus	1,12	1,10	1,08	1,13	1,08	up	22	22	23	26	26	down
Czech Republic	0,89	0,9	0,90	0,88	0,83	up	11	11	11	11	11	
Denmark	0,68	0,71	0,76	0,75	0,75	down	1	2	4	2	2	down
Estonia	0,81	0,75	0,79	0,77	0,77	up	8	4	5	5	5	up
Finland	0,78	0,81	0,81	0,80	0,82	down	6	8	7	6	6	
France	0,77	0,79	0,80	0,81	0,81	down	4	6	6	7	7	down
Germany	0,82	0,87	0,84	0,87	0,84	down	9	9	9	9	9	
Greece	0,98	1,02	1,03	1,04	1,04	down	14	20	20	20	20	down
Hungary	0,95	0,99	0,96	0,99	0,96	down	12	16	14	15	15	down
Ireland	0,98	0,97	0,99	0,99	1,07	down	15	13	16	16	16	down
Italy	1,05	1,06	1,05	1,08	1,05		21	21	22	23	23	down
Latvia	0,97	0,93	0,90	0,91	1,01	down	13	12	12	12	12	up
Lithuania	0,80	0,78	0,74	0,76	0,79	up	7	5	3	3	3	up
Luxembourg	1,16	1,15	1,05	1,06	1,03	up	24	24	21	21	21	up
Malta	4,10	4,33	4,97	5,42	6,16	down	27	27	27	27	27	
Netherlands	0,89	0,9	0,88	0,87	0,86	up	10	10	10	10	10	
Poland	1,04	1,02	0,97	0,93	0,88	up	20	19	15	13	13	up
Portugal	1,13	1,12	1,10	1,07	1,07	up	23	23	24	22	22	up
Romania	1,19	1,18	1,14	1,12	1,16	up	25	25	25	25	25	
Slovakia	1,00	1,01	1,00	1,00	0,97	up	18	18	17	18	18	
Slovenia	0,75	0,72	0,73	0,77	0,73	up	3	3	2	4	4	down
Spain	1,00	1,00	1,02	1,03	1,06	down	16	17	19	19	19	down
Sweden	0,70	0,68	0,67	0,68	0,69	up	2	1	1	1	1	up
United Kingdom	1,02	0,99	1,01	0,99	0,99	up	19	15	18	17	17	up
country	measure W in subperiod 2010-2014					trend	rankings					trend
Austria	0,83	0,85	0,82	0,83	0,81	up	5	7	5	6	6	up
Belgium	1,01	1,02	1,02	1,03	1,05	down	16	17	16	16	16	
Bulgaria	1,09	1,16	1,17	1,15	1,10	down	21	25	24	22	22	down
Croatia	1,01	1,05	1,08	1,00	0,95	up	15	18	18	14	14	up
Cyprus	1,17	1,19	1,26	1,22	1,23	down	25	26	26	25	25	
Czech Republic	0,84	0,83	0,83	0,82	0,84		7	5	6	5	5	up
Denmark	0,79	0,78	0,77	0,78	0,78	up	3	3	3	3	3	
Estonia	0,81	0,81	0,81	0,85	0,91	down	4	4	4	7	7	down
Finland	0,86	0,86	0,84	0,86	0,90	down	9	8	8	9	9	
France	0,86	0,87	0,86	0,85	0,89	down	8	9	9	8	8	
Germany	0,88	0,87	0,87	0,89	0,91	down	10	10	10	10	10	
Greece	1,07	1,13	1,17	1,17	1,16	down	19	21	22	23	23	down
Hungary	0,98	0,99	1,02	1,02	1,03	down	13	15	15	15	15	down
Ireland	1,15	1,15	1,15	1,15	1,11	up	24	23	21	21	21	down
Italy	1,09	1,10	1,10	1,10	1,10	down	20	20	19	20	20	
Latvia	1,01	0,97	0,96	0,95	0,92	up	17	13	13	12	12	up
Lithuania	0,84	0,85	0,83	0,81	0,77	up	6	6	7	4	4	up

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Luxembourg	1,19	1,23	1,32	1,28	1,24	down	27	27	27	27	27	
Malta	2,21	1,95	1,58	1,46	1,46	up	28	28	28	28	28	
Netherlands	0,99	0,97	1,01	1,07	1,06	down	14	14	14	18	18	down
Poland	0,91	0,91	0,89	0,91	0,91		11	11	11	11	11	
Portugal	1,06	1,01	1,03	1,06	1,07	down	18	16	17	17	17	down
Romania	1,18	1,15	1,18	1,24	1,28	down	26	24	25	26	26	
Slovakia	0,96	0,95	0,93	0,95	0,94	up	12	12	12	13	13	down
Slovenia	0,75	0,75	0,76	0,77	0,80	down	2	2	2	2	2	
Spain	1,10	1,14	1,17	1,19	1,23	down	22	22	23	24	24	down
Sweden	0,70	0,71	0,71	0,73	0,73	down	1	1	1	1	1	
United Kingdom	1,10	1,07	1,12	1,09	1,03	up	23	19	20	19	19	up

Source: own calculation

As an example, table 2 shows the situation of Poland (two selected variables) in the period 2010-14 against the other countries that joined EU in 2004 and Sweden - the leader of the classification. The value of the measure below 1 indicates the advantage of Poland in relation to the selected country. The higher values signify the advantage of that country.

In the next step, the level of implementation of the strategy by individual countries in relation to a hypothetical, abstract pattern was evaluated. The assessment was made in accordance with the idea of Hellwig's synthetic measure of development. The results are shown in Table 3. The synthetic measures of development are denoted as H.

Table 2 The situation of Poland against selected countries

variable	year	CY	CZ	EE	HU	LT	LV	MT	SI	SK	SE
X1	2010	1,17	1,09	1,04	0,93	1,00	1,00	0,93	1,09	1,00	1,21
	2011	1,14	1,10	1,09	0,94	1,04	1,03	0,96	1,06	1,01	1,23
	2012	1,09	1,11	1,12	0,95	1,06	1,05	0,98	1,06	1,01	1,23
	2013	1,04	1,12	1,13	0,97	1,08	1,07	1,00	1,04	1,00	1,23
	2014	1,02	1,11	1,12	1,00	1,08	1,06	1,00	1,02	0,99	1,20
X6	2010	0,43	1,10	0,49	0,50	0,68	0,42	0,23	1,08	1,15	0,83
	2011	0,50	1,14	0,53	0,49	0,76	0,48	0,25	1,33	1,10	0,85
	2012	0,50	1,04	0,55	0,48	0,88	0,54	0,27	1,30	1,08	0,76
	2013	0,62	1,04	0,58	0,47	0,89	0,57	0,27	1,44	0,87	0,79
	2014	0,79	0,98	0,47	0,47	0,92	0,64	0,27	1,23	0,81	0,81

Source: own calculations

When comparing individual countries to the pattern, it can be noticed that the number of countries that had improved their situations increased significantly. This is particularly evident in the second period, when the strategy was introduced and the countries took actions to fulfil the aims. Even Malta, which before the announcement of the strategy was marked with very low level of development, improved slightly after year 2010. As in previous approach, the leaders in terms of the degree of implementation of the Europe 2020 Strategy, during the whole period of the study, are the Scandinavian countries: Sweden and Denmark.

Table 3 The synthetic measures of development

country	measure H in subperiod 2005-2009					trend	rankings					trend
Austria	0,45	0,44	0,45	0,45	0,50	up	4	5	4	5	4	
Belgium	0,23	0,23	0,24	0,25	0,26	up	18	17	15	14	15	up
Bulgaria	0,04	0,04	0,02	0,21	0,22	up	26	26	26	18	18	up
Cyprus	0,24	0,23	0,22	0,18	0,21	down	14	16	16	22	19	down
Czech Republic	0,30	0,29	0,29	0,28	0,31	up	13	13	13	13	12	up

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country	measure H in subperiod 2010-2014					trend	rankings					trend
Denmark	0,52	0,50	0,48	0,52	0,54	up	2	2	2	2	2	
Estonia	0,41	0,45	0,44	0,45	0,46	up	6	4	5	4	5	up
Finland	0,50	0,47	0,47	0,51	0,51	up	3	3	3	3	3	
France	0,41	0,40	0,39	0,39	0,41		5	8	9	9	7	down
Germany	0,35	0,31	0,36	0,34	0,39	up	10	12	10	10	8	up
Greece	0,23	0,22	0,21	0,19	0,21	down	16	19	18	20	20	down
Hungary	0,22	0,17	0,19	0,15	0,17	down	19	22	22	24	24	down
Ireland	0,23	0,25	0,22	0,21	0,06	down	17	14	17	19	26	down
Italy	0,16	0,16	0,17	0,14	0,17	up	23	23	24	25	25	down
Latvia	0,31	0,36	0,41	0,39	0,33	up	11	9	8	7	11	
Lithuania	0,37	0,40	0,44	0,42	0,39	up	8	7	6	6	9	down
Luxembourg	0,15	0,15	0,16	0,13	0,19	up	24	24	25	26	21	up
Malta	0,02	0,01	0,00	-0,02	-0,01	down	27	27	27	27	27	
Netherlands	0,36	0,34	0,35	0,34	0,36		9	10	11	11	10	down
Poland	0,10	0,14	0,20	0,23	0,27	up	25	25	21	16	14	up
Portugal	0,18	0,18	0,20	0,22	0,26	up	22	20	20	17	16	up
Romania	0,18	0,18	0,18	0,17	0,18		21	21	23	23	23	down
Slovakia	0,23	0,24	0,25	0,24	0,25	up	15	15	14	15	17	down
Slovenia	0,40	0,42	0,41	0,39	0,45	up	7	6	7	8	6	up
Spain	0,22	0,22	0,21	0,19	0,19	down	20	18	19	21	22	down
Sweden	0,63	0,65	0,67	0,67	0,70	up	1	1	1	1	1	
United Kingdom	0,31	0,32	0,32	0,30	0,28	down	12	11	12	12	13	down
Austria	0,45	0,45	0,49	0,43	0,55	up	3	6	5	4	3	
Belgium	0,29	0,30	0,33	0,34	0,30	up	13	15	15	12	15	down
Bulgaria	0,15	0,13	0,13	0,13	0,19	up	25	25	24	22	21	up
Croatia	0,20	0,16	0,15	0,20	0,24	up	18	23	23	20	19	down
Cyprus	0,19	0,20	0,21	0,13	0,18	down	20	19	19	23	22	down
Czech Republic	0,31	0,35	0,39	0,32	0,40	up	11	11	10	14	11	
Denmark	0,51	0,54	0,57	0,59	0,58	up	2	2	2	1	2	
Estonia	0,43	0,49	0,50	0,42	0,43		6	3	4	5	7	down
Finland	0,44	0,47	0,51	0,46	0,48	up	5	4	3	3	4	up
France	0,39	0,40	0,43	0,37	0,41	up	7	8	8	9	10	down
Germany	0,39	0,41	0,44	0,40	0,42	up	8	7	7	8	8	
Greece	0,20	0,15	0,11	0,11	0,05	down	19	24	27	26	28	down
Hungary	0,21	0,22	0,23	0,24	0,26	up	17	18	18	18	17	
Ireland	0,12	0,10	0,12	0,25	0,16	up	27	27	25	16	25	up
Italy	0,15	0,16	0,19	0,16	0,17	up	24	22	21	21	23	up
Latvia	0,27	0,31	0,37	0,37	0,42	up	15	13	12	10	9	up
Lithuania	0,35	0,36	0,41	0,41	0,47	up	9	10	9	6	5	up
Luxembourg	0,15	0,18	0,19	0,12	0,20	up	22	20	20	25	20	up
Malta	-0,01	0,01	0,05	0,02	0,05	up	28	28	28	28	27	up
Netherlands	0,35	0,38	0,39	0,33	0,36	up	10	9	11	13	12	down
Poland	0,29	0,31	0,33	0,25	0,33	up	14	14	14	15	14	
Portugal	0,18	0,26	0,26	0,24	0,25	up	21	17	17	17	18	up
Romania	0,15	0,17	0,18	0,10	0,16	up	23	21	22	27	24	down
Slovakia	0,26	0,28	0,30	0,22	0,29	up	16	16	16	19	16	

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Slovenia	0,44	0,46	0,48	0,41	0,46	up	4	5	6	7	6	down
Spain	0,13	0,12	0,12	0,13	0,08	down	26	26	26	24	26	
Sweden	0,63	0,66	0,67	0,57	0,67	up	1	1	1	2	1	
United Kingdom	0,31	0,34	0,33	0,35	0,35	up	12	12	13	11	13	down

Source: own calculations

The last analysis was aimed at the assessment of the degree of implementation of national targets. As previously, Hellwig's synthetic measure was applied. But in this case, the variables (denoted Y) were defined as the differences between the value of the indicator (X_i) and the target. In many cases, the value of the variables equalled 0, because the individual targets have already been achieved (compare Country Reports 2015, Eurostat (c)). Based on the values of the synthetic measure of development (denoted H_y) ranking of countries was constructed. The results are shown in the table no 4. For comparison purposes the previous rankings are also presented.

Table 4 The assessment of the degree of implementation of national targets in year 2014

country	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	measure	rankings		
									H_y	H_y	H	W
Austria	2,8	0,77	2,36	0,9	0	0	0	145	0,67	6	3	6
Belgium	5,9	0,54	0	5	1,30	0,3	3,2	525	0,57	11	15	16
Bulgaria	10,9	0,70	0	0	1,40	1,9	5,1	77	0,46	14	21	22
Croatia	3,7	0,61	0	0	0	0	2,8	9	0,72	3	19	14
Cyprus	7,4	0,03	0	4	0	0	0	80	0,64	8	22	25
Czech Republic	1,5	0	0	0	0	0	3,8	0	0,85	1	11	5
Denmark	4,1	0	3,90	0,8	0	0	0	142	0,74	2	2	3
Estonia	1,7	1,54	6,75	0	0,10	1,9	0	85	0,33	18	7	7
Finland	4,9	0,83	7,96	0	0	1,5	0	157	0,45	15	4	9
France	5,1	0,74	2,72	8,7	0	0	6,3	2058	0,31	20	10	8
Germany	0	0,16	10,14	4,2	15,20	0	10,6	0	-0,07	28	8	10
Greece	16,7	0,38	0	2,7	0	0	0	1289	0,30	21	28	23
Hungary	8,3	0,42	0	5,2	0	1,4	0	753	0,53	12	17	15
Ireland	2,0	0,45	2	7,4	0	0	7,8	87	0,46	13	25	21
Italy	7,1	0,24	0	0	0	0	2,1	4264	0,38	17	23	20
Latvia	2,3	0,82	0	1,3	0	0	0	26	0,69	4	9	12
Lithuania	1,0	0,88	0	0	0	0	0	0	0,68	5	5	4
Luxembourg	0,9	1,06	4,69	6,5	0	0	13,3	30	0,24	23	20	27
Malta	3,7	1,15	0	5,3	0,08	10,3	6,5	25	0,18	26	27	28
Netherlands	4,6	0,53	8,02	8,5	2,00	0,7	0	111	0,32	19	12	18
Poland	4,5	0,76	0	3,6	0	0,9	2,9	0	0,60	10	14	11
Portugal	7,4	1,41	0	4	0	7,4	8,7	306	0,18	25	18	17
Romania	4,3	1,62	0	0	0	6,8	1,7	369	0,28	22	24	26
Slovakia	6,1	0,31	0	2,4	0	0,7	13,1	19	0,42	16	16	13
Slovenia	7,2	0,61	0	3,1	0	0	0	89	0,61	9	6	2
Spain	14,1	0,80	0	3,8	0	6,9	1,7	4016	0,08	27	26	24
Sweden	0	0,84	1,39	0	2,80	0	0	0	0,66	7	1	1
United Kingdom	0	1,28	0	8	4,80	1,8	0	3540	0,18	24	13	19

Source: own calculations

When reviewing the implementation of the Europe 2020 Strategy in the terms of national targets, the image of Europe is noticeably different. Only a few countries occupy a similar place in the rankings in both approaches. This group of countries includes both countries with a high level of development as Denmark and Lithuania, and

less developed countries such as Spain and Malta. Sweden, who led in the rankings in previous approaches, dropped to seventh position. The leader in terms of the level of fulfilment of national targets is Czech Republic, which have already accomplished six of the eight aims. It seems that Germany has very difficult task. They occupy the last place in the standings despite they have already achieved two targets including a high employment rate people aged 20-64. Malta which accomplished one aim, as in previous approaches, took place in the end of ranking. It should be emphasized that among ten the best countries six of them joined EU in 2004.

Conclusions

The applied research methods made it possible to assess the degree of implementation of the Europe 2020 strategy and the progress made by EU Member States in this regard. The created synthetic measures enabled to point the best and the worst countries in this respect. Also the relative disparities between countries in the implementation of the strategy were analysed. It was examined whether countries increase or decrease the developmental advantage over the other, during the investigated period of time.

The study confirmed the strong differentiation of EU Member States in achieving the objectives of Europe 2020. The leaders in terms of the level of implementation of the Europe 2020 strategy as well as the progress made in the investigated period of time are the Scandinavian countries: Sweden, Denmark, and Finland. During the whole period of analysis these countries have occupied leading positions in the rankings. It should be emphasized that the majority of countries that joined the Community in 2004, has made significant progress in achieving the objectives and reduced the relative disparities compared to other Member States. The leaders among them were: Slovenia, Lithuania, and the Czech Republic. It should also be noted that the countries, political leaders of EU (Germany, France, Great Britain, and especially Italy) achieved rather disappointing results. Taking into consideration the role of these countries in the Community, the lack of significant progress in the implementation of the strategy can demonstrate the scale of problems that the European Union must overcome.

The analysis showed that most of the countries made significant progress in achieving specific objectives such as increasing investment in R & D, reducing greenhouse gas emissions, increase the use of renewable energy and reducing the number of young people do not continue education. The biggest problem in all EU countries remains the fight against poverty and social exclusion.

In 2015, the European Union has reached the halfway point in the implementation of the Europe 2020 Strategy. At this stage, it becomes increasingly important to monitor the achievements of all the Commonwealth countries in the implementation of the various specific objectives and the strategy as a whole. The evaluation of the progress made by individual EU members can not only help to identify good practices, but also to prevent making the same mistakes. The results of the study can be used by the European Commission as well as the institutions and authorities of the different countries of the Community to evaluate the progress made and to take appropriate actions.

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STRUCTURAL EXPORT CHANGES FOR LITHUANIAN DAIRY INDUSTRY

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Abstract

Purpose of the article Export plays a key role in building more sustainable economic growth and the importance of its ability to with-stand different demand shocks is unquestionable. Despite this, export is influenced by economic policy, macroeconomic, political and other factors which come from internal and external sources. For instance, Russian government announced an embargo on dairy products on 6 August 2014 and it had huge impact for Lithuanian exporters. As a result of these restrictions, the main aim of this paper is to analyze Lithuanian dairy industry export distribution by geographical areas and to calculate export concentration degrees according to Herfindahl - Hirschman indexes before and after limitations.

Methodology/methods For the analysis we use data from the Lithuanian Department of Statistics (Statistics Lithuania) bases for the 2008-2015 years. We calculated export concentration degrees according to Herfindahl - Hirschman indexes.

Scientific aim The main aim of this paper is to analyze Lithuanian dairy industry export distribution by geographical areas and to calculate export concentration degrees according to Herfindahl - Hirschman indexes before and after limitations.

Findings The analysis showed that during 2008-2013 periods Lithuanian dairy industry's export was not diversified enough and concentration was considered as moderate or high. Lithuanian dairy industry export analysis in global markets revealed that approximately 56 percent of total export went to Russia and the countries economically related to it such as Latvia or Poland, also Sweden. This poses a threat to the development of export because changeable product demand is observed in Russia and various political decisions have a significant impact on export's performance. During 2015 year, situation slightly changed and dependence on interrelated markets declined. Also trade relations with United States of America, Kazakhstan, South Korea, Saudi Arabia, Vietnam and Israel were strengthened. Thus, it can be posit that dairy industry could withstand external effects and to contribute to economic development.

Conclusions The overall analysis of structural export changes for Lithuanian dairy industry revealed that market is moderately concentrated. However, strong export concentration to Russia decreased, orientation to other global markets such as Asia, North and South America was strengthened. Thus, it can be posit that demand fluctuations in any country are not so hazardous. In order to maintain and fortify this position it is necessary to diversify export by reconsidering strategies and policies.

Keywords: export diversification, Russian sanctions, dairy industry, Herfindahl – Hirschman index, Lithuania.

JEL Classification: O52, O53, F14.

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Introduction

Nowadays market is very competitive and because of that companies must try to find new and unique solutions in order to overcome different challenges and barriers. The main aim for many companies is to increase sales and the best way to do it is to entrance into foreign markets. For this reason economic relations between the countries were started and international trade emerged as a result of such activity. Also it is very important to mention that foreign trade includes import and export. However, the main object in this empirical study is export, its development and diversifications because they are regarded as the most important factors that lead to the growth in small and open countries. In the post-crisis period, Lithuanian export has become the key factor of economic stability and it has prevented possibly emerging negative effects. Despite this, it is very important to take into account that the openness of economics creates opportunities to be affected by external shocks. Nevertheless, the volume of incurred upheavals depends on the level of export diversification. Higher degree of export concentration leads that export is more vulnerable to external shocks. (Morrissey & Sharma, 2015). In addition, as other research shows (Songwe & Winkler, 2012; Aditya & Acharyya, 2013; Agosin, 2007; Newfarmer, Shaw & Walkenhorst, 2009) the importance of product and export diversification for economic growth and development is uncontroversial.

Lithuanian economic growth highly depends on food industry's export, but contribution of each group is different. This is because export is influenced by macroeconomic, political and other factors that come from internal and external sources. For instance, in response to the West's economic restrictions, Russian government announced on 6 August 2014 a ban on most food and agricultural products from the European Union, the United States of America, Norway, Canada and Australia. As a consequence, the EU pork exporters completely lost their market share in Russia (Djuric, Götz & Glauben, 2015; Food and Agriculture Organization of the United Nations, 2014). Moreover, Ashford (2016) says that "According to the Austrian Institute of Economic Research, continuing the sanctions on Russia could cost over 90 billion euros in export revenue and more than two million jobs over the next few years" (p. 118). Also it is worth to mention that Russia prohibited to import Lithuanian dairy products and strengthened Lithuanian truck control and it has caused damage to Lithuanian exporters. In order to explore the harm of adopted restrictions, our aim of this research is to analyze Lithuanian dairy industry export diversification by countries and to calculate export concentration degrees according to Herfindahl - Hirschman indices.

1 Methodology and Data

In 2012, export again became a key factor of economic growth. In order to maintain sustainable growth of export, it is necessary to be able to withstand against multiple demand and supply shocks. One of the ways to reduce their impact is the diversification of products. There are a lot of different indices which measure export concentration, but all of them cover various definitions, dimensions, forms, and levels of diversification. Scientific literature distinguishes the Commodity Specific Traditionalist Index (CSTI), the Variance of the CSTI and Herfindahl - Hirschman index (Samen, 2010).

According to the Central Bank of the Republic of Lithuania (2013), the Herfindahl - Hirschman index (HHI) is the most popular ratio in order to calculate the degree of market concentration. HHI shows how a product market is concentrated in a few trading partners or on the contrary, how product market is distributed to various states. Also, the index may reveal whether the country exports only one group of goods or distributes variety of product categories (Laskiene & Venckuviene, 2014; Maloni, Carter, Kaufmann, & Rogers, 2015).

HHI can measure market concentration by products and by countries, but in this paper the concentration of the market is useful to measure just by countries and it can be expressed as follows:

$$HHI_j = \frac{\sqrt{\sum_{i=1}^n \left(\frac{x_{ij}}{X_j}\right)^2} - \sqrt{\frac{1}{n}}}{1 - \sqrt{\frac{1}{n}}} \quad (1)$$

Where HHI_j – concentration index of a country or country group, x_{ij} – value of export for country j and product i , $X_j = \sum_{i=1}^n x_{ij}$ – total export, n – number of countries (United Nations Conference on Trade and Development [UNCTAD], 2012).

HHI value can fluctuate between 0 and 1. When products are exported to a single country then index gains its highest value. On the contrary, when products are homogeneously distributed to all trade partners an index value become equal to 0. However, the Herfindahl - Hirschman index value is never just equal to 0 or 1, so the evaluation of various values is listed below:

- HHI < 0.01 – market is highly diversified;
- 0.01 < HHI < 0.15 – market is un-concentrated;
- 0.15 ≤ HHI < 0.25 – market is moderately concentrated;
- HHI ≥ 0.25 - market is highly concentrated (Mundeikis, 2013).

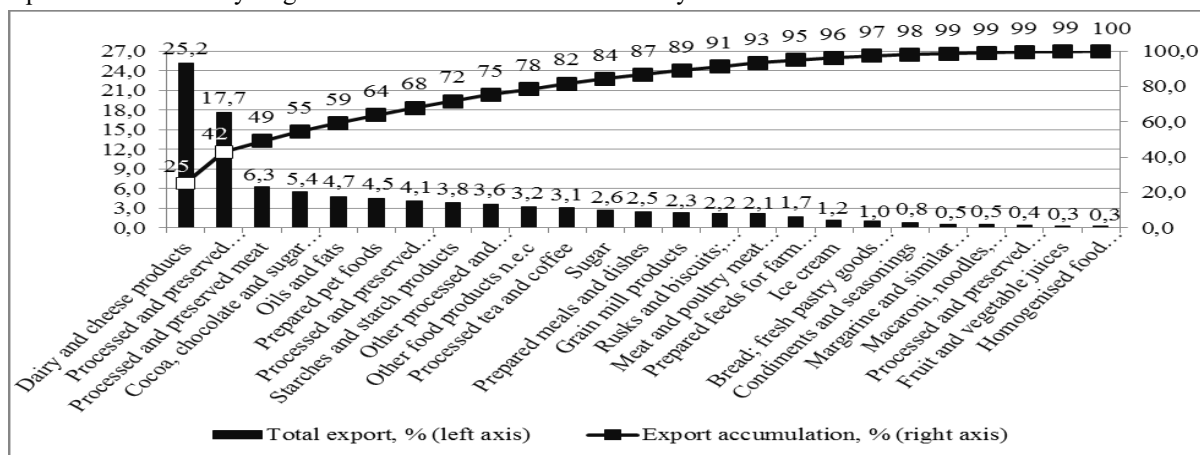
All calculations are implemented by using Lithuanian dairy industry export data, which is classified according to Classification of Products by Activity (CPA 2008) at 4-digit group level. For the analysis, we use the data from Lithuanian Department of Statistics bases for 2008-2015 years.

2 Finding and Discussion

This section deals with the main findings and results of export changes in Lithuanian dairy industry. It is based on the research which mainly analyzed export data in the period of 2013-2015.

2.1 The analysis of Lithuania's food industry

Russian import restrictions are applied to different food products and because of that it is essential to find out products group which forms majority of Lithuanian food export. In this analysis our aim was to divide Lithuanian food industry into smaller categories and compare them according to share of the export in total export of food industry. Figure 1 reflects the results of this analysis.



Source: Statistics Lithuania, 2016

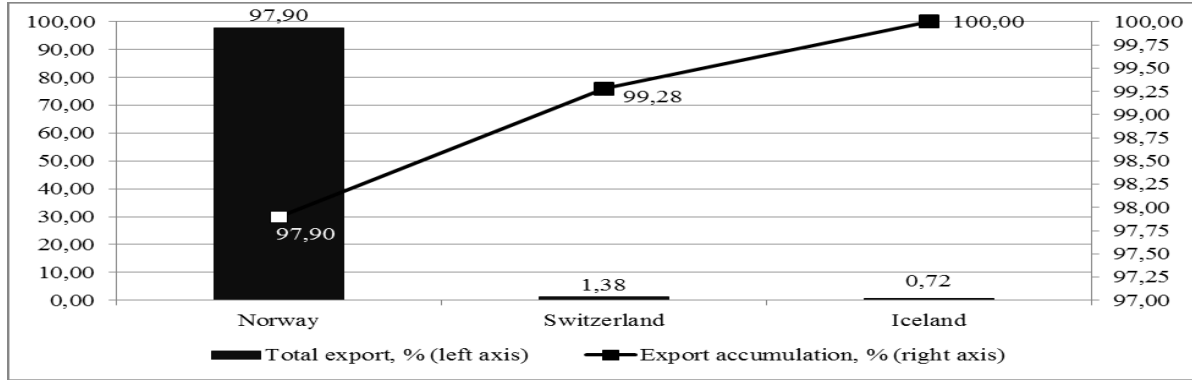
Figure 1. Lithuania's food industry export structure by products in 2014

Analysis of the figure above reveals that export is concentrated into two main groups. One of them is dairy and cheese products which represent 25.20 percent. The other product group is processed and preserved fish, crustaceans and mollusks which constitutes 17.70 percent of total export. Further analysis has revealed that apart from these two biggest sectors which together combine 42.90 percent, there are a lot of other smaller categories. Other 9 groups are insignificant and export prevails between 3.10 to 6.30 percent. It is also seen that sugar, prepared meals and dishes, grain mill products, rusks and biscuits; preserved pastry goods and cakes, bread; fresh pastry goods and cakes and ice cream production is not oriented to other countries, because these groups approximately export 12.00 percent, which means that each group has from 1.00 to 2.60 percent. In summary it can be said that Lithuania's food industry export structure by products does not have a big differentiation and dairy industry is the most important. Because of that further analysis will be concentrated into dairy industry.

2.2 Lithuanian dairy industry's export structure by countries before restrictions

In this part of the research will be examined Lithuanian dairy industry's export structure by countries until food embargo was implemented by Russia. Since our aim is to evaluate structural export changes for Lithuanian dairy industry before and after Russia's embargo, the first part of this research will examine export data in 2013, and second part will focus on export changes after restrictions have been applied. Dairy products are exported to many countries and because of that it was decided to analyze export concentration according to different groups: the Commonwealth of Independent States (CIS), the European Free Trade Association (EFTA), the European Union (EU) and other countries which are not members of named groups.

Thus, Figure 2 shows Lithuania's dairy industry export structure in EFTA countries in 2013.

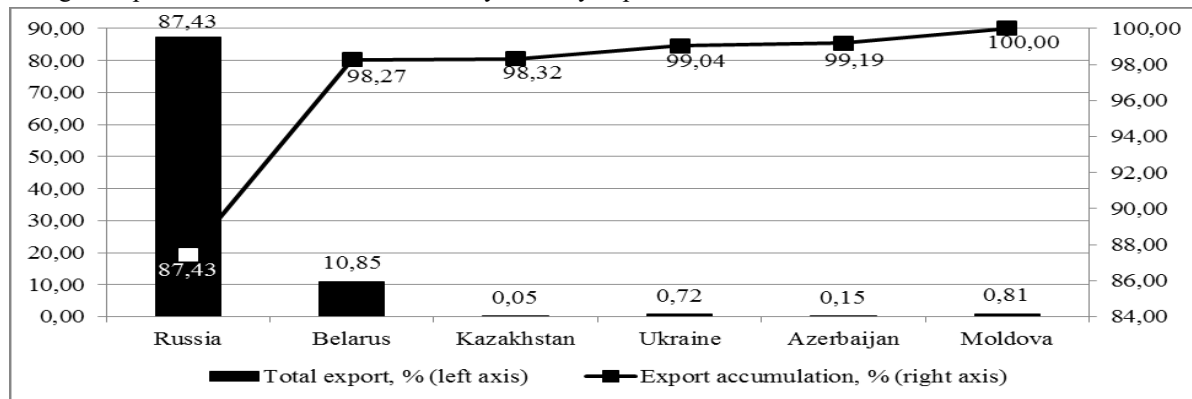


Source: Statistics Lithuania, 2016

Figure 2. Lithuania's dairy industry export structure in EFTA countries in 2013

Figure above clearly shows that export to Switzerland and Iceland accounts for a negligible share compared with dairy products export to Norway. When Lithuania's dairy industry concentration degree will be analyzed in four separate groups, then general picture of export structure will be provided. Of course, Norway will be added to such analysis because it dominates in its category.

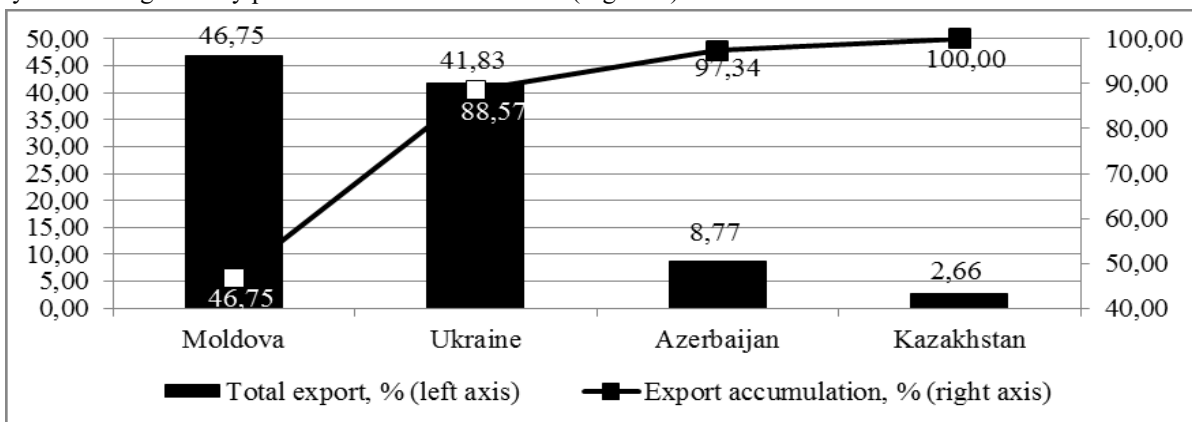
Figure 3 provides view of Lithuania's dairy industry export structure in CIS countries in 2013.



Source: Statistics Lithuania, 2016

Figure 3. Lithuania's dairy industry export structure in CIS countries in 2013

Figure 3 reveals that dairy products export to Russia and Belarus forms more than 98 percent of total export to CIS countries. Because of that it is very beneficial to examine the concentration of export to the CIS countries by eliminating two key partners - Russia and Belarus (Figure 4).



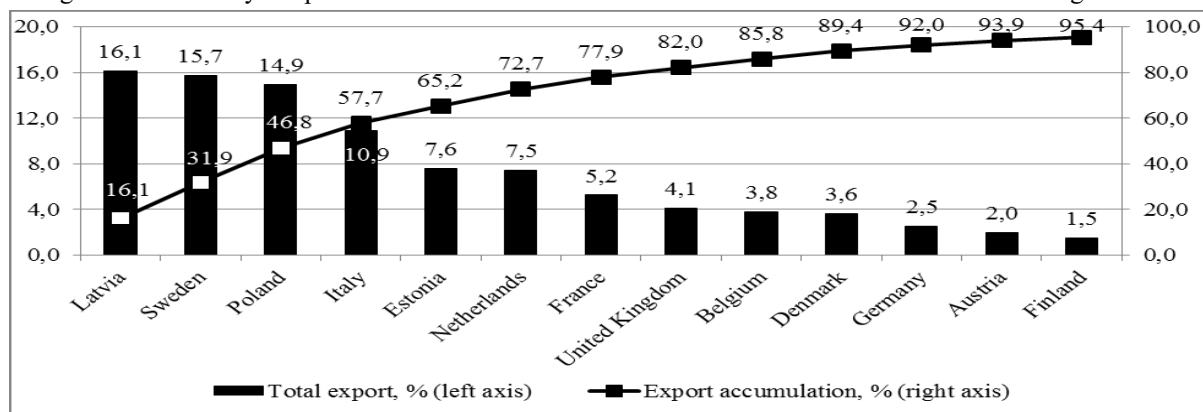
Source: Statistics Lithuania, 2016

Figure 4. Lithuania's dairy industry export structure in CIS countries (without Russia and Belarus) in 2013

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When Russia and Belarus were eliminated from CIS block, Lithuanian dairy industry's export diversification by countries increased. Despite this, Moldova and Ukraine took the leading position and both countries accumulated more than 88 percent of total export. Ties with Kazakhstan were developed at least and total exports to this country seek only 2.66 percent. It is important to mention that the elimination of Russia and Belarus revealed two other dominating countries - Moldova and Ukraine.

Another very important group in which dairy products are exported is European Union. According to the Lithuanian Department of Statistics, it was discovered that these products are exported to all EU countries except Luxembourg. However, Figure 5 presents information only about 13 countries, because export to Bulgaria, Slovenia, Romania, Ireland, Hungary, Spain, Czech Republic, Greece, Croatia, Slovakia, Cyprus, Malta and Portugal amounted only 4.6 percent. For this reason it is not useful to include latter data to overall figure.

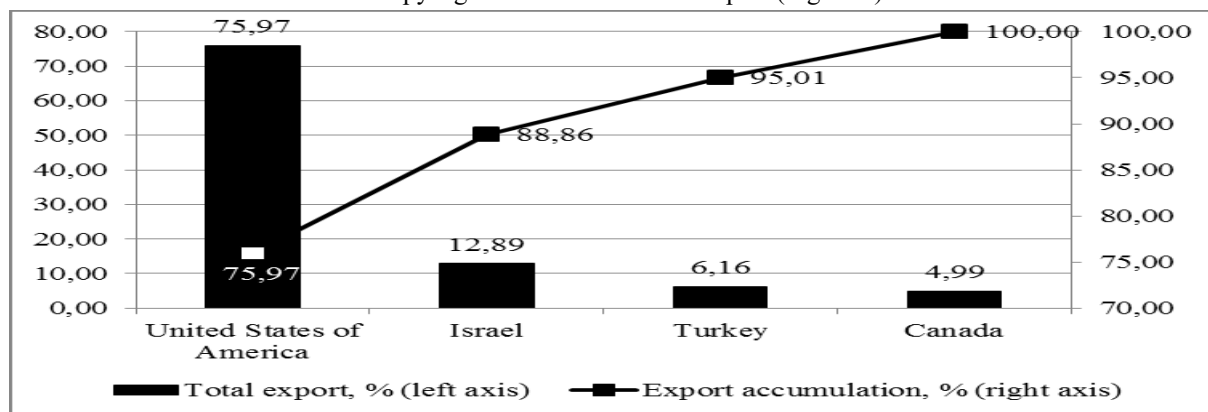


Source: Statistics Lithuania, 2016

Figure 5. Lithuania's dairy industry export structure in EU countries in 2013

The examination of Figure 5 revealed that Lithuania's dairy industry export to EU countries was the most uniformly distributed compared with earlier analyzed groups of countries. The largest share of export went to Latvia, Sweden and Poland, respectively 16.10, 15.70 and 14.90 percent. Export to Italy, Estonia, Netherlands and France was smaller, but indexes prevail between 5.20 to 10.90 percent. Dairy industry's export to remaining countries was lower than 5 percent.

According to the Lithuanian Department of Statistics information, Lithuania exports dairy products to 10 countries which are not members of CIS, EFTA and EU. Despite this, trade relations are not strongly developed with all of them and 4 countries occupy significant share of total export (Figure 6).

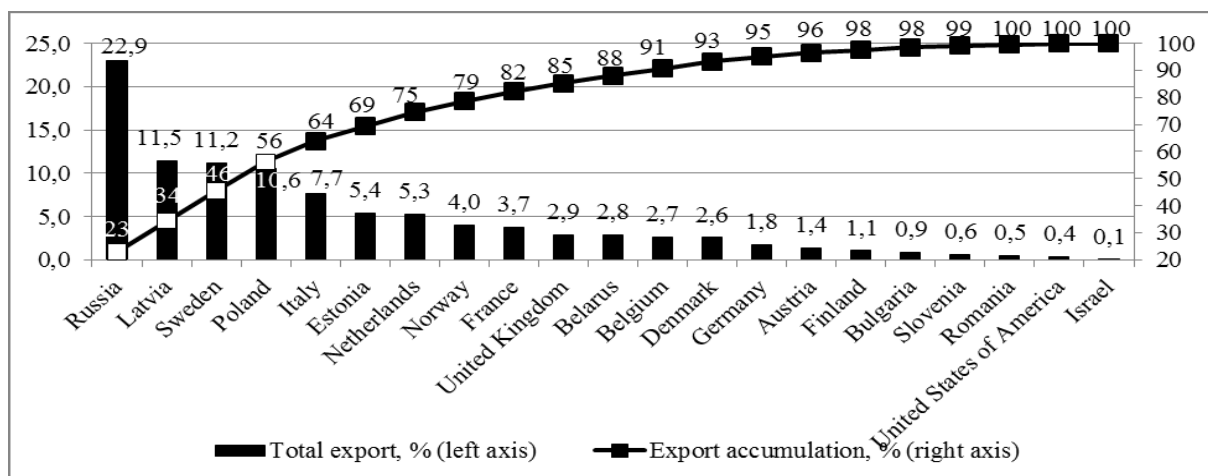


Source: Statistics Lithuania, 2016

Figure 6. Lithuania's dairy industry export structure in other countries in 2013

As it can be seen in figure above, export is concentrated to the United States of America, Israel, Turkey and Canada which respectively covers 75.97 percent, 12.89 percent, 6.16 percent and 4.99 percent.

In order to understand whether Lithuanian dairy industry's export by countries is concentrated or diversified, it is necessary to analyze not only individual markets, but also implement overall analysis on a global scale (Figure 7).



Source: Statistics Lithuania, 2016

Figure 7. Lithuania's dairy industry export structure in global markets in 2013

Lithuanian dairy industry export analysis in global markets revealed that approximately 56 percent of total export goes to Russia (22.90 percent), Latvia (11.50 percent), Sweden (11.20 percent) and Poland (10.60 percent). It is important to say that three of these countries are members of the European Union, only Russia is assigned to Commonwealth of Independent States. Talking about Norway it is important to mention that this country dominated in EFTA group, but from the global perspective it become less important and covers only 4.00 percent of total export. Belarus in CIS countries block was second the most important partner, but in global context it fell into eleventh place. A very similar situation is observed in the United States of America and Israel, because respectively only 0.04 percent and 0.10 percent of total export goes to these countries. In summary it can be said that Lithuanian dairy industry's export is mainly focused on geographically close regions, such as Russia and European Union countries.

For more precise evaluation of Lithuanian dairy industry's export concentration, Herfindahl – Hirschman indexes were calculated. HHI were calculated by countries for 2008-2013 periods (Table 1).

Table 1. HHI values of Lithuanian dairy industry's export

Year		2008	2009	2010	2011	2012	2013
HHI by countries	value	0,220	0,186	0,220	0,296	0,283	0,209
	assessment	moderately concentrated export	moderately concentrated export	moderately concentrated export	highly concentrated export	highly concentrated export	moderately concentrated export

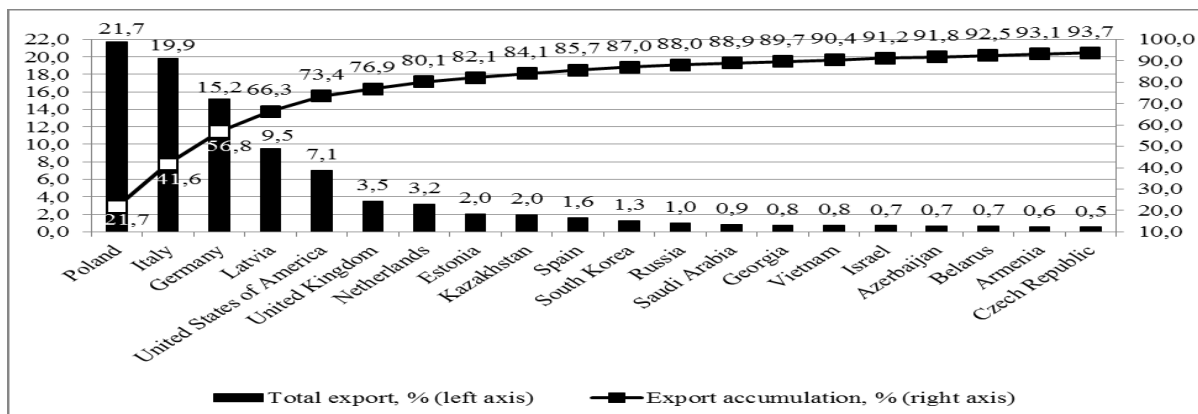
Source: Authors' analysis

As it can be seen from Table 1, dairy industry's export concentration by countries is moderate or high. Also graphical analysis revealed that Lithuanian export is oriented to geographically close areas, such as the European Union countries, Russia and Belarus. It shows that demand shock, which is linked with the main trade partners, could have a significant impact on dairy industry's export. It is believed that this poses a threat to the development of export because changeable product demand is observed in Russia and also political decisions have a significant impact on export. It is known that Russia has announced an embargo on many countries and strengthened Lithuanian truck control. All these events convince that it is necessary to develop trade relationship with China, Southeast Asia, North and South America and Africa. So, another part of this study will analyze how mentioned sanctions affected Lithuanian dairy industry's export and what conclusions have been made.

2.3 Lithuanian dairy industry's export structure by countries after restrictions

In this part of the research will be examined Lithuanian dairy industry export structure by countries after Russian government announced a ban on dairy products. Such decision was made on 6 August 2014, so the majority of the research will rely on 2015 year third quarter data. Figure 8 represents Lithuania's dairy industry export structure in global markets in 2015.

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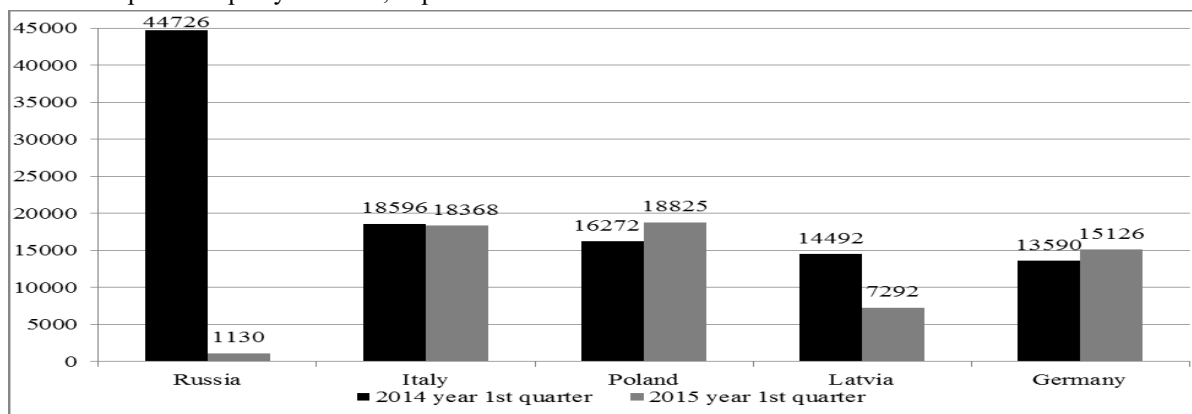


Source: Statistics Lithuania, 2016

Figure 8. Lithuania's dairy industry export structure in global markets in 2015

The figure above revealed that approximately 56 percent of total export goes to Poland (21.70 percent), Italy (19.90 percent) and Germany (15.20 percent). Comparing Figures 7 and 8 it is seen that the importance of trade partners has completely changed. The importance of Russia in 2015 has fell a lot and this country took only 1.00 percent of total export, meanwhile in 2013 it was the most important player. Also it is worth to mention that trade ties with United States of America, Kazakhstan, South Korea, Saudi Arabia, Vietnam and Israel was strengthened. 7.10 percent of Lithuanian dairy industry export in 2015 went to United States of America and it was 6.70 percent more than in 2013.

Also it is worth to look how the importance of key trade partners has changed since 2014-2015 period. Figure 9 reveals export's scope by its value, expressed in thousand euros.



Source: Statistics Lithuania, 2015

Figure 9. Lithuania's dairy industry export volume to the most important markets in 2014-2015

In 2014 first quarter Russia has not been announced an embargo and it was the most important trade partner. The worth of dairy products export was nearly 45000 thousand euros. Meanwhile after imposed restrictions it seeks only 1130 thousand euros. Export amount to Italy was stable and fluctuated between 18500 thousand euros in both years. Foreign trade to Poland and Germany has lightly increased, but the value of dairy products in Latvia has halved.

For more precise evaluation of Lithuanian dairy industry's export concentration in 2015, HHI was calculated and its value was equal to 0.203. Comparing with 2013 it decreased just a little and market has remained moderately concentrated. However, as it was recommended earlier, trade ties with more independent countries were developed. In summary it can be said that Lithuanian dairy industry export is not diversified enough, but dependence on changeable markets declines.

Conclusion

The main aim of this article was to analyze how external political decisions, such as Russia's ban on food products, affected Lithuanian exporters. We tried to explore what effect was caused, how it influenced the

volume of Lithuanian dairy industry export into particularly trade partners. Moreover, Herfindahl - Hirschman index contributed to reveal the degree of Lithuanian dairy industry export diversification.

The first part of this research revealed that Lithuanian dairy industry's export structure until food embargo was highly concentrated to geographically close areas. For instance, even 22.90 percent of total dairy products export went to Russia, respectively 11.50 percent and 11.20 percent to Latvia and Sweden. Trade ties with more reliable and independent markets, such as United States of America, Asia or Africa were not developed.

The second part of article dealt with consequences to Lithuanian dairy exporters when restrictions from Russian government have been applied. It was disclosed that more than 56 percent of total dairy products were distributed to geographically close areas as well, but the importance of Russia declined considerably. In addition, relations with countries which are not closely economically linked with each other were established.

The overall analysis of structural export changes for Lithuanian dairy industry revealed that market is moderately concentrated. However, strong export concentration to Russia decreased, orientation to other global markets such as Asia, North and South America was strengthened. Thus, it can be posit that demand fluctuations in any country are not so hazardous. In order to maintain and fortify this position it is necessary to diversify export by reconsidering strategies and policies.

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*RELATIONSHIP BETWEEN SECTORS COMPETITIVENESS AND EXPORT TO
INCOME RATIO: THE CASE OF LITHUANIAN MANUFACTURING INDUSTRY*

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Abstract

Purpose of the article The purpose of this article is to evaluate competitive situation of largest Lithuanian manufacturing sectors and identify relationship between competitiveness of the manufacturing companies and export to income ratio.

Methodology/methods To evaluate competitiveness of companies in Lithuanian manufacturing sector composite competitiveness index was developed. Composite index includes key indicators, qualifying the actual performance and competitiveness of manufacturing companies, such as labor productivity per employee, gross margin, average monthly wages per employee, labor efficiency, ratio of investment into machinery and gross profit. Relationship between competitiveness index of the analyzed sectors and their export to income ratios were established with the help of scatter graph and correlation coefficient.

Scientific aim Aim of the research is to determine whether companies in Lithuanian manufacturing sector, which generate higher income from activities in foreign markets, possess competitive advantage over companies, realizing most of their production in local market.

Findings Competitiveness index indicated that advantage in separate manufacturing sectors is determined by specifications of their activities and nature of the operations. Scatter graph did not display a linear relationship between competitiveness index and export to income ratio. Nevertheless, sectors, generating either very large or very small shares of their income in foreign markets (compared to other Lithuanian manufacturing sectors), encounter higher operation risks. Because of this reason values of their competitiveness indexes stand out as having largest and smallest values.

Conclusions In order to secure a stable competitive situation companies in Lithuanian manufacturing industry are required to diversify their operating activities by ensuring income streams from several different markets. Companies, which concentrate their operations mainly in a single environment, may face greater risks of deteriorating results in case of unanticipated economical or political occurrences. To further verify these conclusions examination of larger data volume is required.

Keywords: manufacturing industry, competitiveness, competitiveness index, factors of competitiveness, export.

JEL Classification: L60, F14

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Introduction

Modern economy can be considered as the most open and liberal in the whole history. With a big number of trade agreements signed and World Trade Organization, which currently includes 162 countries, overseeing that open trading rules are being followed, companies all over the world can reach global markets and expand their activities. The globalization also intensified the competition. Companies now need to be aware not only of new potential competitors emerging in local markets but also competitors entering from foreign countries. To better understand competitiveness, it is essential to analyze what makes companies and countries distinguish themselves and acquire competitive advantage.

The research of competitiveness in separate economic sectors is especially relevant in Lithuania because of the current external environmental factors: the recovery from recession in mentioned country is suppressed by slowdown in markets, which import most of the production manufactured in Lithuania (European Union countries and Russia). Because of this reason exploitation of methods and resources, which could improve competitive situation, are essential to stimulate further growth.

The purpose of this paper is to, with the help of a created composite index, evaluate competitive situation of largest Lithuanian manufacturing sectors and identify connection between the calculated competitiveness indexes and export to income ratios, where export includes production, manufactured by Lithuanian companies. In order to perform empirical study, factors affecting competitiveness need to be defined. These factors can be separated into two groups: competitiveness induced by political and ruling authorities (country level) and competitiveness caused by actions of intra-company management (company level).

Literature analysis showed that authors have similar opinions on factors affecting competitiveness. One of the more important factors is the ability to create and integrate technologically advanced equipment and methods into company level operations (Baumol, Litan, Schramm, 2007). The technological innovation is not likely to work in countries, where adequate level of imitation is not an option. Profitability of a company is an important factor in formation of the competitiveness, because in order to create and commercialize something new sufficient funds are needed. Previous empirical study has shown that gross profit margin has strong impact to economic values of analysed Lithuanian companies (Markauskas, Saboniene, 2015). That is the reason why effective system of intellectual property rights is needed. Political actions, which determine country's level of liberalization and openness to the global markets, are also significant (Cox, 2006; Miles, Scott, 2005).

Competitiveness on global level depends on wages, which affect labor productivity, and return on investment, which creates appeal for further investment (Bruneckiene, Paltanaviciene, 2012). Efficient level of wages impacts growth of worker's loyalty and influences the labour productivity (Peach, Stanley, 2009). Higher level of average monthly wages also reflects the employment of labor with higher qualification. Human resources' skills influence productivity due capabilities that the employees can apply in the production process (Oguz, Knight, 2010). The accumulation of competences and skills is generally considered to be fundamental for growth since it facilitates the creation and diffusion of new technologies (Cotis *et al.* 2010). For industry to achieve competitiveness in international level realization of productivity gains from technological advances is needed (Cypher, Dietz, 2004). In general, all factors, which can help lower production costs of a company, can lead to a stronger competitive situation (Wickens, 2008).

Considering the country level competitiveness factors balance in country's current account is also required in order to maintain competitive position in an international market (Brown, 1996). Emergence of a large current account deficit could ultimately lead to a depreciation of the currency. Deteriorating expectations of investors could lead to a speculative attack in the spot market, which can result in a sudden value loss of a currency. That is why well planned and implemented monetary policy is very important. Industrial policy implications, which are related to the innovation development, R&D intensity, technological and labor quality upgrading, are a significant contribution not only to the efficiency of the manufacturing industry but also to the business competitiveness in the domestic and foreign markets (Saboniene, 2014). Political choices directly affecting currency value can have major influence in forming countries competitive level (Haldane, 2004). Wrong choices can lead to large capital outflows from the country. Imposed higher taxes also might lead to a reduced competitiveness (Snowdon, 2005). Competition also helps to fortify market forces and control production prices (Cooper, 2008; Feenstra, 2004; Mankiw, 2008).

To conclude the literature analysis, factors affecting competitiveness can be decomposed into company level and country level factors. Actions and policies of the government, like establishment of taxation system, implementation of the monetary policy, liberalization of the markets, tend to influence country's competitiveness in international level. Effectiveness of the implemented methods of operation, ability to attract qualified work force with attractive wages and suitable environment, ability to generate funds and invest them into technologically advanced equipment are reasons of created competitiveness in the company level. In this

research paper factors, which exist in the country level, are not analyzed and are assumed to be a constant. Internal factors, such as average monthly wages, ratio of amount invested into new machinery and gross profit, labor efficiency (ratio of value added from production to number of employees), gross margin and labor productivity (ratio of income to hours spent in production).

1 Method

In the empirical research and evaluation of competitiveness index nineteen largest Lithuanian manufacturing sectors were selected. Manufacturing sectors were chosen for the analysis because of the importance to Lithuanian economy. According to data of Lithuanian Department of Statistics in 2013 manufacturing contributed to 21.59% of Lithuanian gross national product – most of all other sectors (second was wholesale and retail sector with almost 19%). The question we tried to answer in this empirical research is: which of the Lithuanian manufacturing sectors have the best competitive situation and does entering the foreign markets help improving their competitiveness?

There are examples of researchers, who used composite index to evaluate factors affecting investments in Lithuanian technological sectors (Adlyte, 2014). In similar manner composite index, which purpose is to evaluate competitiveness situation in Lithuanian manufacturing sector, was calculated:

$$X_n = \frac{X_1 + X_2 + X_3 + X_4 + X_5}{5} \quad (1)$$

In the 1 formula X_n is competitiveness index of manufacturing sector, X_1 represents average monthly wages per employee in the sector, X_2 – ratio of investment into machinery and gross profit, X_3 – labor productivity per employee, X_4 – gross margin, X_5 – labor efficiency as a ratio of income per hour worked. To smooth out short term fluctuations each of the variables were calculated as arithmetic average of 2012 and 2013 year data. All the data used in this research paper is taken from Lithuanian Department of Statistics.

The chosen set of indicators enables us to make up a profile of an individual manufacturing sector, and allows to assess its competitiveness. Each of the 5 variables vary from 0 to 10 – sector with the lowest value in corresponding factor receives 0 and sector with highest factor receives 10. All other sectors are valued in a proportion to highest and lowest values. That means that competitiveness index is calculated only in a relationship to other analyzed sectors.

Later the connection between calculated competitiveness index and export to income ratio (which shows how much of income is generated from exported production) is established. The connection is visualized with the help of a scatter chart.

2 Findings

As the competitiveness index of individual manufacturing sectors includes key indicators, which characterize companies' ability to operate in competitive market, index reflects competitiveness caused by actions of intra-company management (company level). Nevertheless, the company management is highly dependent on business environment in the country as well as on state's industry policy, innovation policy, etc.

Statistical data demonstrates the fact that traditional sectors of manufacturing industry prevail in Lithuania. The manufacturing of food and drinks, wood and furniture are among sectors with sizeable percentage shares of sales. According to data of Lithuanian Department of Statistics in 2013 the percentage share of sales was 18.6 percent in manufacture of food and drinks, 4.4 percent in manufacture of wood and of products of wood, 6 percent in manufacture of furniture. Table 1 shows the results of competitiveness index calculation.

The average value of competitiveness index for all analyzed manufacturing sectors is 3.44 out of 10. That shows that values of variables included in the analyzed composite index concentrate on lower part of the interval. There are only a few sectors that stand out and display high values of each calculated variable as most of the sectors tend to have comparatively low values.

Looking at the results of competitiveness index, manufacturing of prime chemicals, fertilizers and nitrogen in the years of 2012 and 2013 had the highest average monthly wages per employee and labor efficiency indicators. Despite the highest value of competitiveness index this manufacturing sector had lowest value of gross margin out of all analyzed. It is important to note, that manufacture of chemicals and chemical products has growing share of sales in Lithuania (10.2 percent in 2013).

The analysis of competitiveness index disclosed that highest investment and gross profit ratio was found in cutting and planing of wood sector. Despite that, values of other variables were low (average monthly wages, labor productivity and labor efficiency ratios have values of less than 1). Highest value of labor productivity is found in sector of manufacturing of animal feeds. Despite that, mentioned sector has the lowest value of

investment and gross profit ratio. Highest value of gross margin ratio is found in sector of manufacturing of general purpose machines and equipment.

Table 1 Competitiveness index variables of Lithuanian manufacturing sectors

Manufacturing sector	X1	X2	X3	X4	X5	Competitiveness index
Manufacturing of prime chemicals, fertilizers and nitrogen compounds	10,00	2,58	7,95	0,00	10,00	6,11
Manufacturing of animal feeds	6,31	0,00	10,00	5,41	5,23	5,39
Manufacturing of drinks	5,17	3,27	6,57	6,29	2,79	4,82
Manufacturing of paper and cardboard	4,36	3,37	5,44	9,15	1,54	4,77
Manufacturing of general purpose machines and equipment	4,27	1,82	4,60	10,00	1,03	4,34
Manufacturing of products made out of plastic	2,95	6,77	4,08	5,83	1,96	4,32
Manufacturing of dairy products	3,29	7,65	2,86	1,48	2,67	3,59
Printing and services related to printed	2,27	4,15	2,49	8,11	0,81	3,57
Manufacturing of other foodstuffs	2,90	1,11	4,28	7,20	1,72	3,44
Repairs of metal products, machines and equipment	3,98	4,31	2,66	5,28	0,80	3,41
Fish, crustaceans and clam processing and preservation	2,22	8,69	1,61	1,70	1,40	3,12
Manufacturing of metal products used for construction	1,72	5,70	1,71	5,75	0,70	3,12
Cutting and planing of wood	0,05	10,00	0,43	4,12	0,53	3,03
Manufacturing of other textile products	1,38	3,11	1,71	6,91	0,69	2,76
Manufacturing of products from wood, cork, straws and weave materials	0,75	5,76	1,01	4,91	0,71	2,63
Manufacturing of furniture	1,76	4,06	1,41	4,15	0,70	2,42
Bakeries and manufacturing of flour products	0,32	5,10	0,09	2,84	0,21	1,71
Meat processing, preservation and production	0,00	3,89	0,53	1,06	1,64	1,42
Manufacturing of clothes, excluding fur coats	0,01	0,48	0,00	6,04	0,00	1,30

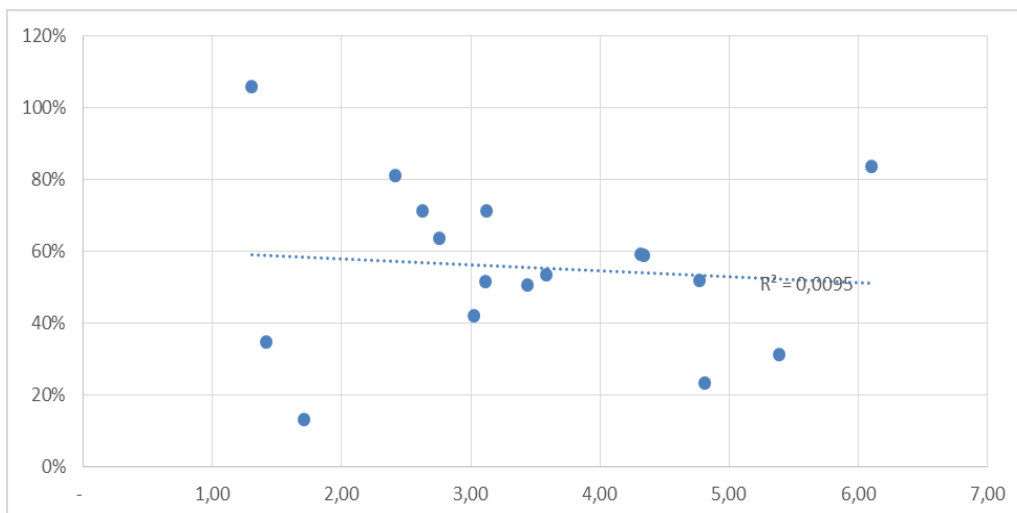
Source: own calculations

For further analysis the calculated competitiveness index and export to income ratios (shows how much of income was generated from exported production) were compared to see if there is a correlation between these two indicators.

Analysis is made in order to examine if more competitive manufacturing sectors in Lithuania have outgrown their local markets and found possibilities to expand to foreign markets. Scatter plot is a good method to visually present this bivariate data (Barreto, Howland, 2006).

Figure 1 presents a scatter graph, which shows distribution of competitiveness index and export to income ratio of seventeen Lithuanian manufacturing sectors.

Two of the sectors, which were presented in calculation of competitiveness index, were removed. Printing and services related to printing and Repairs of metal products, machines and equipment sectors were omitted because they offer services which usually are not exported to foreign markets. Their inclusion would distort the results.



Source: own calculations

Figure 1 Scatter graph of competitiveness index and export to income ratio in Lithuanian largest manufacturing sectors.

The scatter graph (Figure 1) shows that there is no linear relation between calculated competitiveness index and share of exports in all of income. Value of the determination coefficient and correlation coefficient (-9.7%) indicates that linear relationship model is invalid.

3 Discussion

Concluding the results of competitiveness index calculations (Table 1) we can see that none of the manufacturing sectors have high values in all of 5 variables. Manufacturing of prime chemicals, fertilizers and nitrogen compounds has value of 10 in two of five variables, but also 0 in one. Manufacturing of animal feed has one value of 10 and one of 0. Some of the sectors with low competitiveness index have high values in separate variables. Manufacturing of clothes, excluding fur coats sector has the lowest competitiveness index out of all 19 analyzed sectors but presents the 7th highest value of gross margin. Manufacturing of other textile products and Fish, crustaceans and clam processing and preservation sectors, being in the lower half of the analyzed sectors according to the competitiveness index, have high values in respectively gross margin and investment into machines and gross profit ratios. Reason for this – different principles of operational execution in individual sectors. Some of the sectors are more manual labor intensive. They do not rely on intensity of manufacturing equipment as much as others. Because of that less of earned funds are reinvested into restoring production capacity of the equipment. Value of gross margins also highly depends on current price of raw materials. Because of that reason results of competitiveness index can fluctuate according to changes of material market prices.

Three out of seventeen sectors, which generate more than 80 percent of their income from exported production, are manufacturing of prime chemicals, fertilizers nitrogen compounds, manufacturing of furniture, manufacturing of clothes, excluding fur coats sectors. Manufacturing of prime chemicals and fertilizers sector has the highest competitiveness index out of the all analyzed sectors, but Manufacturing of clothes, excluding fur coats sector has the lowest value. Manufacturing of furniture has 4th lowest value of competitiveness index.

There are four sectors out of seventeen, which generate less than 40 percent of income from exported goods: manufacturing of animal feeds, manufacturing of drinks, bakeries and manufacturing of flour products and meat. First two mentioned manufacturing sectors are among top three sectors according to the calculated competitiveness index. Last two mentioned sectors are among three sectors, which have lowest value of the index.

Conclusion

We can conclude that there exists no linear relationship between competitiveness indexes and export to income ratios of largest Lithuanian manufacturing sectors in the years of 2012 and 2013. The other observation is that manufacturing sectors, which generate most of their income in foreign markets (more than 80 percent) and ones generating small part of income in foreign markets (less than 40 percent) tend to have either comparatively high or comparatively low competitiveness index values.

These conclusions imply that best way to secure a stable competitive situation is by diversifying operation markets of the companies. Concentration in one market can lead to a competitive advantage if the demand in the market is growing, but economic and political shocks can lead to a deteriorating performance. Distributing cash flows from different market can mitigate decline of income if the factors that lead to worsening economic situation and lower demand in one market do not spread to other places of activities.

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*COMPARISON OF ONE STEP-AHEAD FORECASTING OF NITROGEN
FERTILIZER PRICE*

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Abstract

Purpose of the article One of the main and most subsidized economic sectors in the EU is the agriculture business. Depending on how effective farmers and other market players are, the politicians can make adequate decisions. The effectiveness of farmers mainly depends on their costs and harvest selling price. Fertilizers and other operating materials are an important parts of the farmer's budget. The fertilizer price can have a huge impact on farmers financial situation. For farmers, as well as other agribusiness, accurate fertilizers price forecast has direct impact on the cost and profitability. On the other hand depending on fertilizer price forecast, industry can try to balance its production and maximize the profit.

Methodology/methods The following statistic and econometric methods have been used: statistical analysis, random walk, ARIMA, linear regression with lagged variables, neural network. Data was collected from different German and international fertilizer market publications.

Scientific aim The main purpose of the paper is to compare four different models of one step-ahead forecasts of weekly fertilizer (Calcium ammonium nitrate) price in Germany. Several models are build and tested in the paper: random walk model, univariate AR times series model, linear model with lagged two independent variables (sold quantity and price of substitute product) and neural network model.

Findings Our research suggests that the forecasting of fertilizer price is important from a practical and theoretical point of view. Mainly due to the constantly growing fertilizer price (Riester, 2015) which constitutes a significant part in all farmers costs, fertilizers price forecast can be crucial for farmers.

Conclusions Results suggest that all models are suitable for forecasting fertilizer price; but the most accurate models has been univariate AR(6) times series model and neural network model.

Keywords: Fertilizer price forecast, forecast efficiency, ARIMA, linear model with lagged variable, neural network.

JEL Classification: M21, Q16

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Introduction

It is hard to imagine that modern agriculture business can be effective and competitive without usage of plant protection products and fertilizers. In Germany the total farmers' cost structure expenses for fertilizers vary from 14.4% in 2000 up to 6.5% in 2013 (Riester, 2015); but in the real business and daily discussions, farmers and dealers are more concerned with price than quality issues. On the other hand if we analyze farmers expenses only for fertilizers in Germany in time period from 2000 till 2013, we notice that expenses grew by 37.4% (Riester, 2015). This can explain why farmers are so price sensitive fertilizer buyers.

The main fertilizers used by farmers are lime and nitrogen fertilizers in different forms (Riester, 2015). In Germany there are three main nitrogen fertilizer products; Calcium ammonium nitrate (CAN), urea and urea-ammonium nitrate solution (Wodsak et al., 2015). Information about price changes, main deals, ships loads, etc. is very public and updated constantly

CAN is a traditional German product. The biggest EU market for CAN are Germany, Scandinavian countries, Netherland and Austria). The local producers set the price level and plays a main role in the market. Other market players (mainly importers and producers of neighboring countries) follow the local producers and mimic their strategy.

For farmers as well as for other player in agribusiness, accurate fertilizers price forecast can have a direct impact on the cost and profitability of the company. On the other hand depending on fertilizer price forecast, fertilizer producers can try to balance its production and maximize the profit.

The price of agricultural products and operating materials are forecasted by a lot of commercial organizations (i.e. "Profercy", "Fertilizer week", etc.). Unfortunately there is no free access to most of the publications and their forecast. Furthermore we didn't find any papers about performance of a similar forecast as discussed in this paper.

As mentioned by Allen (1994), data about agriculture products and prices has been collected periodically and very precisely; but there are shortage of the data about agriculture raw material (fertilizers, seed and agrochemicals) prices and sold amounts. For this reason it is not very surprising that the main research focus of the agricultural economists has been focused on the amount of harvest or agriculture products stock price forecasting rather than on raw material price forecasting.

One of the first tries to describe possible prediction methods for fertilizer price was concluded by Vroomen (1991). He noted, that fertilizer prices in the US were highly variable from mid-1970s till the beginning of 1990s. Vroomen (1991) suggested for the forecasting of urea price to use a combination of time series and regression model. For regression analysis he used monthly wholesaler's price and transportation costs as exploratory variables. Vroomen concludes, that the suggested combination of time series and regression model can be used for forecasting and have reasonable accuracy for short term forecasting.

Sander and Manfredo (2003) evaluated United States Department of Agriculture (USDA) forecast for some agriculture products and concluded that univariate AR(4) time series model is better than USDA forecasts.

The second huge price fluctuation on agriculture products and raw material has dramatically increased in 2007-2010 (Von Friedrich, Loy, Muller 2012). These fluctuations were unexpected for a lot of market experts and were also not predicted by the used forecasting models at that time.

Von Friedrich, Loy and Muller (2012) explained the usage of expert surveys and prediction markets methods to forecast price of agricultural production, which can also be used to forecast price of raw materials too. There are several examples in different industries, where prediction market has been used for different tasks and have achieved better results, as other prediction methods. Von Friedrich, Loy and Muller (2012) have concluded that if there is some amount of participants and if they have some amount of knowledge about the matter, then prediction markets can give slightly a better prediction for agricultural product price, in comparison to other statistical methods.

The method of prediction markets use the idea of "Wisdom of the crowds", which was firstly described by Galton (1907). Meantime expert surveys also can give good prediction accuracy, but they are difficult to organize and often are very time consuming for experts. Therefore the sample of the expert surveys is often to small.

The main purpose of this paper is to compare four different statistical models of one step-ahead forecasts of weekly fertilizer CAN price in Germany.

2 Research data and methodology

2.1 Data

Dataset consists of 530 observations and includes bulk calcium ammonium nitrate (CAN) price in Euro/mt on CIF German inland's basis, bulk urea price in Euro/mt on FOT German port basis and monthly CAN deliveries for German farmers in nitrogen mt (metric tons). Prices and delivered quantities are collected from fertilizer market publications. Dataset covers time period from 19th July of 2004 to 31st December of 2015. CAN and urea prices are recorded on Fridays every two weeks, CAN deliveries – for last day of the month (Figure 1). CAN deliveries to the farm are presented here by nitrogen (or active material in CAN) metric tons. There are two recorded prices – min and max price in the market. For future analysis an average price was calculated and used.

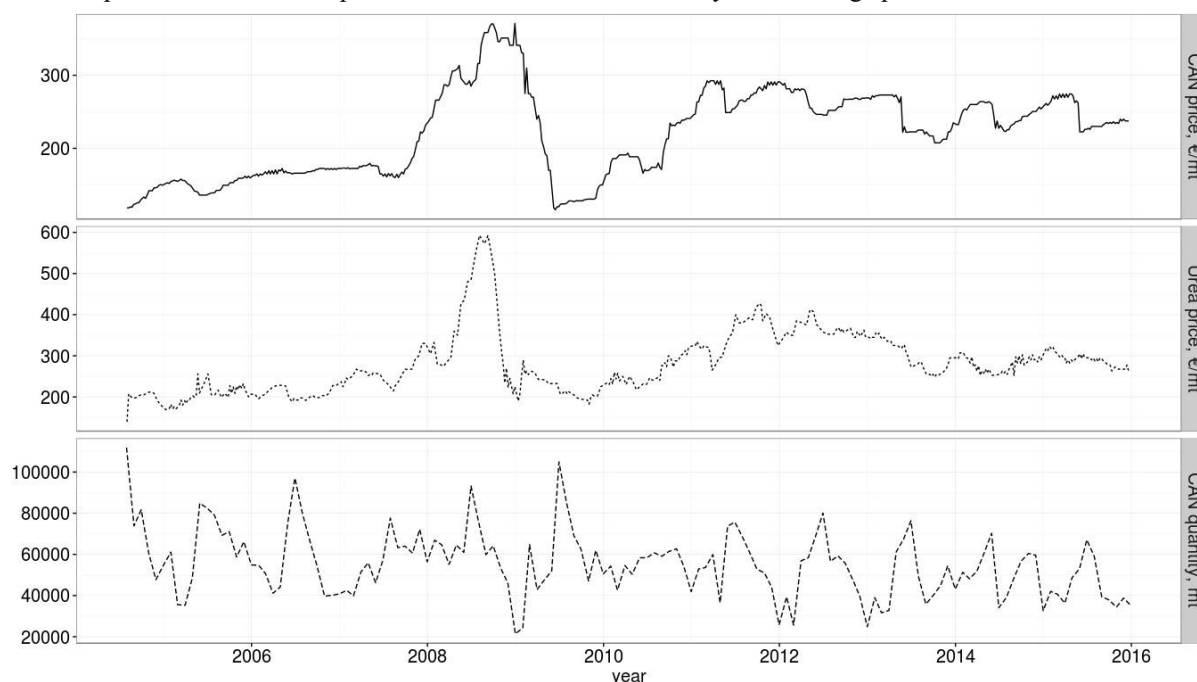


Figure 1 CAN CIF German inland's price in Euro/mt, urea FOT German port price in Euro/mt CAN deliveries for German farmers in mt of nitrogen

No missing CAN price and CAN deliveries values have been found. 174 missing urea price values have been found. Because of data and economic logic, it was considered that if urea price are missing, then the last known urea price is still valid.

Due to the fact that not every month ends on Friday there was a lot of “virtually” missing CAN delivery values in the time series. For example in August 2004 five CAN and urea prices and one monthly delivered amount were reported; while in September 2004 four CAN and urea prices and one monthly delivered amount have been reported and so on. In order to eliminate the “virtually” missing CAN delivery values, we considered that the last known value is valid until new value has been announced.

Both Augmented Dickey-Fuller Test (Fuller, 1976) and Phillips-Perron Unit Root Test (Phillips, Perron, 1988) show that CAN prices are not stationary (table 1). That's way it was decided to calculate the first differences of the price data and use these data in the further calculations. After transformations, both Augmented Dickey-Fuller Test as well as Phillips-Perron Unit Root Test shows that CAN prices are stationary.

Despite that Augmented Dickey-Fuller Test and Phillips-Perron Unit Root Test for urea price data show that the data are stationary for the better final models understanding, it was decided also to calculate first differences.

For CAN quantity data, Augmented Dickey-Fuller Test and Phillips-Perron Unit Root Test show that data are stationary (no transformation for these data was done).

Table 1 Results of stationary test

	Augmented Dickey-Fuller Test		Phillips-Perron Unit Root Test	
	Statistic	p-value	Statistic	p-value
CAN price	-3.2987	0.07091	-9.4407	0.5831
Urea price	-5.9057	< 0.01	-833.68	< 0.01
First differences of CAN price	-3.703	0.02391	-26.496	0.0186
First differences of urea price	-6.2246	< 0.01	-696.42	< 0.01
CAN quantities	-7.7623	< 0.01	-69.65	< 0.01

In some models, past (lagged) values of CAN quantities were also included. One period and 12 periods lagged values were evaluated.

2.2 Research methods

In this section we describe statistical models used for price forecast. In the sections below, random walk models, autoregressive models, linear models with two lagged independent variables and neural network models, are described in details.

2.2.1 Univariate models

Random walk with drift

One of the simplest and yet most important models in time series forecasting is the Random walk model (Nau, 2014). Random walk model is the simplest model analysed here. Because the true mean of the differences is not equal to 0 ($p > 0.05$), we are using random walk with a drift model. Our model has the following simple form:

$$y_t = y_{t-1} + d + \varepsilon_t; \varepsilon_t \sim i.i.d.N(0, \delta^2) \quad (1)$$

where y_t is differences of CAN price in Euro/mt, d – drift term, t – time period and ε – is an error term. The following was used for the forecasting of price differences k -step ahead with random walk model from period t :

$$\hat{y}_{t+k} = y_t + k\hat{d} \quad (2)$$

where \hat{d} is the estimated drift, \hat{y} is forecasted value, k - coefficient. As mention by Nau (2014), the estimation of the drift term, in the random walk with the drift model, can be tricky. The obvious way to estimate the drift is:

$$\hat{d} = \frac{y_t - y_1}{t-1} \quad (3)$$

where \hat{d} is the estimated drift and t – is period.

Random walk model was used as a benchmark model for comparison against all other models. We used random walk model in order to predict the price difference (\hat{y} – from equation (2)) and after that we add predicted difference to last known price.

Autoregressive model

One of the simplest and most used econometric models in the practice is autoregressive models. These models are also very helpful for forecasting. The main idea is to find the best and most appropriate time series model, which observations are modelled as a function of past observations (Bessonovs, 2014). The p -th order autoregressive time series (Brockwell & Davis, 2002) has the following form:

$$y_t = c + \sum_{i=1}^p \varphi_i y_{t-i} + \varepsilon_t; \varepsilon_t \sim i.i.d.N(0, \delta^2) \quad (4)$$

where y_t is weekly CAN price in Euro/mt, φ and c are coefficients, p is order of AR terms and ε – is an error term. To forecast k -step ahead we are using the following:

$$\hat{y}_{t+k} = \hat{c} + \sum_{i=1}^p \hat{\varphi}_i y_{t-1+k} \quad (5)$$

where \hat{y} is forecasted value, $\hat{\varphi}$ and \hat{c} are estimates of the coefficients. The lag structure of autoregressive model was selected automatically by choosing best statistic of Akaike Information Criterion (AIC).

2.2.2 Regression model with lagged variables

Regression model with lagged variable (RMLV) is a dynamic model, which is determined by two effects, the dynamic effect and the correlation effect (Maeshiro, 1993). In the simplest form RMLV has the following structure:

$$y_t = \alpha + \beta_0 x_{t-1} + \beta_1 x_{t-1} + \dots + \beta_q x_{t-q} + \varepsilon_t \quad (6)$$

Where α is intercept, β - coefficients, x - lagged dependent or independent variable, q - lag number, ε - is an error term.

To forecast price differences one-step ahead we are using the following:

$$\hat{y}_{t+1} = \hat{\alpha} + \hat{\beta}_0 x_t + \hat{\beta}_1 x_{t-1} + \dots + \hat{\beta}_q x_{t-q} \quad (7)$$

where \hat{y} is forecast difference, $\hat{\alpha}$, $\hat{\beta}_0$, $\hat{\beta}_1$, $\hat{\beta}_q$ are estimates of the coefficients and x is the last known value of dependent or independent variable, q - number of lag.

We assume that, in our case, CAN price are repeating the following simple form of RMLV:

$$y_t = \alpha + \beta_0 y_{t-1} + \beta_1 u_{t-1} + \beta_2 c_{t-1} + \varepsilon_t \quad (8)$$

Where α is intercept, y_t is differences of CAN price in Euro/mt, y_{t-1} is past value (lag 1) of differences of CAN price in Euro/mt, u_{t-1} is past value (lag 1) of differences of Urea price in Euro/mt, c_{t-1} is past value (lag 1) of differences of delivered CAN quantities in Germany in mt of nitrogen and ε - is an error term.

To forecast the price differences one-step ahead we are using the following:

$$\hat{y}_{t+1} = \hat{\alpha} + \hat{\beta}_0 y_t + \hat{\beta}_1 u_t + \hat{\beta}_2 c_t \quad (9)$$

where \hat{y} is the forecast of price difference, $\hat{\alpha}$, $\hat{\beta}_0$, $\hat{\beta}_1$, $\hat{\beta}_2$ are estimates of the coefficients and y_t , u_t , c_t are the last known values (respectively) of differences of CAN, Urea prices and CAN quantities. In order to compare different models, predicted price differences are added to the last known CAN price.

Three different regression models with lagged dependent variables have been tested:

- model 1 - includes last known CAN, urea prices and CAN quantity. This model is marked as RMLV3 in the results section;
- model 2 - two periods lagged CAN quantity data have been added to model 1. This model is marked as RMLV4 in the results section;
- model 3 - 12 periods lagged CAN quantity data have been added to model 2. This model is marked as RMLV5 in the results section.

2.2.3 Neural network

One of most promising supervised learning model for modelling complex nonlinear relationships are neural networks (Baesensa et al., 2002). This model is suitable for classification as well as regression problems. Neural networks are used in different areas, for instance in medical research, for repeated purchase modelling (Baesensa et al., 2002) and for forecasting the stock market (Ticknor, 2013).

Neural networks try to simulate the human brain. Typically neural network have at least three layers - input layer, one or more hidden layer and output layer. Each layer has one or more neurons (layer units).

For our purpose we have chosen Bayesian regularized neural network (BRNN). This type is more robust than standard backpropagation networks (Burden & Winkler, 2008). Bayesian regularization is a mathematical process that converts a nonlinear regression into a "well-posed" statistical problem in the manner of a ridge regression. The advantage of BRNN is that the models are robust so that the validation process is unnecessary (Burden & Winkler, 2008).

Our neural network model consists of two layers that can be described as follows (MacKay, 1992):

$$y_i = g(x_i) + \varepsilon_i = \sum_{k=1}^s w_k g_k(b_k + \sum_{j=1}^p x_j \beta_j^k) + \varepsilon_i \quad (10)$$

where - ε - is an error term, which $\sim N(0, \delta^2)$, s - is the number of neurons, w_k - is the weight of k -th neurons, b_k - is bias for k -th neuron, $k = 1, \dots, s$, β_j^k - is the weight of the j -th input, j - is number of input neurons, $j = 1, \dots, p$, g_k - is the activation function.

Our activation function g_k has the following form:

$$g_k(x) = \frac{\exp(2x) - 1}{\exp(2x) + 1} \quad (11)$$

Our neural network tries to minimize the following function:

$$F = \beta E_d + \alpha E_w \quad (12)$$

where E_d – is the error sum of squares, E_w – is sum of squares of network parameters (both weight and biases), $\beta = \frac{1}{2\sigma_\beta^2}$, $\alpha = \frac{1}{2\sigma_\alpha^2}$, σ_θ^2 is a dispersion parameter from weights and biases.

We have decided to test a very simple neural network, which have one hidden layer and there is only one neuron in this layer. The principal scheme of the neural network is shown in Figure 2.

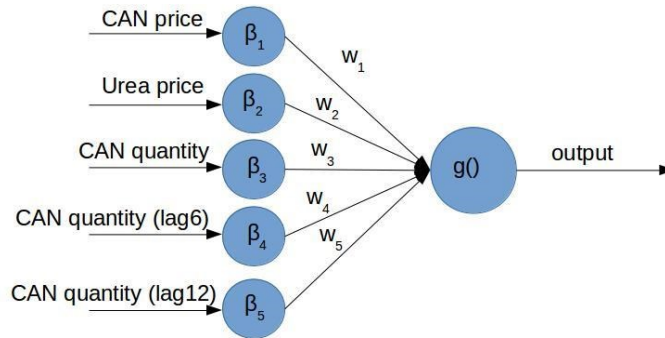


Figure 2 Principal scheme of used neural network

As an input for the neural network, the last known CAN, urea prices, CAN quantity, one period and 12 periods lagged CAN quantity data was used. Our neural network model in the results section is marked as NN.

2.3 Forecasting methodology and estimation issues

With each model ten predictions was made. For the first prediction 520 observations (from 530) were used to build the model, the 521st observation has been dedicated for the prediction calculation and model evaluation. For the second prediction 521 observations were used to build the model and the 522nd observation was used for prediction and model evaluation. The same procedure was repeated 10 times. As a consequence we had 10 predictions and 10 real values for each model.

As forecasting accuracy measurement Root mean square error and Median relative absolute error was chosen.

2.3.1 Root mean square error

One of the most used accuracy measurement for generalizing results of different forecasting methods is Root Mean Square Error (RMSE) (Carbone, Armstrong, 1982). This error measurement is also very popular among academicians:

$$RMSE = \sqrt{\frac{1}{N} \sum_{i=1}^N (y_i - \hat{y}_i)^2} \quad (13)$$

Where y_i – is actual value, \hat{y}_i – is forecast value, N – number of forecast.

2.3.2 Median relative absolute error

As mentioned by Armstrong and Collopy (1992) RMSE is not always good for comparing accuracy across series. Because we have a relatively small set of forecasted series, Median Relative Absolute Error (MdRAE) is also appropriate method to compare prediction models. MdRAE is described as the middle value of all the relative absolute errors (RAE) of a dataset when they are ordered by size. Relative absolute error is the absolute value of an error divided by the absolute error (Armstrong, 2002).

Significance level (p) for all statistical calculation was set by 0.05.

All statistical computation and model buildings were done using R programming language (version 3.2.3).

3 Results

We observed that during the analyzed period, CAN price grew by 98 %, urea price grew by 112 % and CAN quantity grew marginally only by 2.5 %.

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True mean of the CAN price differences was not equal to 0 ($p = 0.45$); this confirms our decision to use random walk with drift model.

In order to use the right parameters for autoregressive models, we automatically check the lag order from 1 to 15. The lag structure for models evaluations and prediction was selected by choosing the lowest AIC values. Test results and AIC are reported in table 2.

Table 2 Results of autoregressive model lag structure selection

Model no.	AR model	AIC statistic	Model no.	AR model	AIC statistic
1.	AR(7)	3466.595	8.	AR(12)	3472.784
2.	AR(9)	3467.440	9.	AR(14)	3473.739
3.	AR(6)	3468.315	10.	AR(4)	3473.971
4.	AR(8)	3468.567	11.	AR(13)	3474.210
5.	AR(10)	3468.846	12.	AR(15)	3475.569
6.	AR(5)	3469.122	13.	AR(3)	3483.603
7.	AR(11)	3470.820	14.	AR(2)	3491.379

Despite that AIC statistic for AR(7) model was the best, we have decided to also check AR(6) and AR(9) models.

RMLV coefficients (table 3) show that in all models, lagged value of urea price differences are insignificant ($p > 0.05$). Moreover and due to big differences in the data range (range of CAN and urea price differences is [-145.0; 76.5] and range of CAN quantities is [21 394.04; 104 919.61]), it is hard to interpret coefficients of lagged CAN quantity.

Table 3 Coefficients and p-values of 10th regression models with lagged variables

Model	Intercept		Lag of CAN price		Lag of urea price		Lag of CAN quantity		2 nd lag of CAN quantity		12 th lag of CAN quantity	
	Coeff.	p.val	Coeff.	p.val	Coeff.	p.val	Coeff.	p.val	Coeff.	p.val	Coeff.	p.val
Rmlv3	-3.30	<0.01	-0.13	<0.01	0.007	0.71	0.0001	<0.01	-	-	-	-
Rmlv4	-4.96	0.01	-0.14	<0.01	0.008	0.67	0.0001	<0.01	-0.0001	<0.01	-	-
Rmlv5	-3.41	0.01	-0.17	<0.01	0.004	0.84	0.0001	<0.01	-0.0001	<0.01	0.0001	<0.01

All predictions made by models and real values (in the figure marked as line) are plotted on figure 3. From the figure 3 we can see that no model has predicted outliers (5th prediction), but there were also some points where predictions came close to the real values.

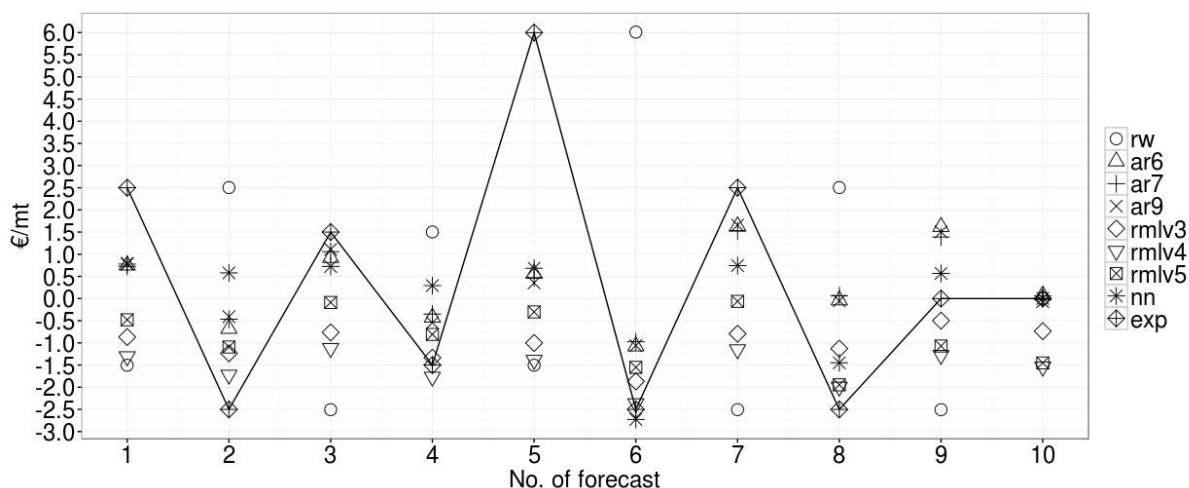


Figure 3 Predicted by model and expected values

From the figure 3 and table 4 it is not clear or predictions produced by different models and real are significant different. For this reason we did the analysis of variance (ANOVA) on the predicted and expected values. ANOVA results show the statistical significant difference ($F(8, 81) = 2.399$; $p = 0.02$), but Tukey multiple comparisons of means test shows that there is no significant difference between prediction means of different models and real (expected) values.

Table 4 Means of predicted and real (expected) values

Real	RW	AR(6)	AR(7)	AR(9)	RMLV(3)	RMLV(4)	RMLV(5)	NN
0.350	0.200	0.334	0.3501	0.329	-1.023	-1.562	-0.885	0.020

One of explanation between different ANOVA and Tukey test results on predicted and real values can be outliers, which were not predicted by any model.

Analysis of variance on only predicted values also shows statistical significant difference ($F(7, 72) = 3.623$; $p = 0.002$), Tukey multiple comparisons of means test shows that values predicted by the 2nd regression model with lagged variables (RMLV4) was significantly different (worse) than values predicted by random walk, AR(6), AR(7), AR(9) and NN. From the RMSE and MdRAE (table 5) we can conclude that the most accurate models were autoregressive model of lag order 6 (in the table 2 marked as AR(6)) and neural network model.

Table 5 Error measurements of the models

Model	RW	AR(6)	AR(7)	AR(9)	RMLV(3)	RMLV(4)	RMLV(5)	NN
RMSE	5.01	2.21	2.26	2.26	2.85	3.07	2.54	2.22
MdRAE		0.4005	0.4246	0.4218	0.4195	0.5188	0.4120	0.3905

Discussion

Nowadays business practitioners use a lot of different analysis and forecasting tools in their daily lives. Some of the ideas discussed in our paper are quite old (e.g. regression, forecasting markets), but due to the lack of available data was not fully tested with fertilizer price.

Our research suggests that the forecasting of fertilizer price is important from a practical and theoretical point of view. Mainly due to the constantly growing fertilizer price (Riester, 2015) which constitutes a significant part in all farmers costs, fertilizers price forecast can be crucial for farmers.

Vroomen (1991) was one of the first researchers who described possible prediction methods of fertilizer price. He proposed to use a combination of time series and regression model for fertilizer price forecast. For regression analysis he used monthly wholesaler's price and transportation costs as exploratory variables. Vroomen concludes that suggested combination of time series and regression model can be used for forecasting. Unfortunately our results shows, that forecasts with similar models were inaccurate.

One of the simplest model's in time series forecasting is the Random walk model (Nau, 2014). All our forecast models were more accurate than Random walk (which served as our benchmark model).

We observed that univariate AR(6) time series model and neural network model show the most accurate predictions. Our results obtained from univariate time series models correspond with results obtained by Sanders and Manfredo (2003), despite that they have research the price of agricultural products while we concentrated on fertilizer price.

It is interesting to note that only AR(6) and neural network (NN) models RMSE and MdRAE statistics coincided and for the rest of the models the ranking is very different. All our models were not accurate on outlier predictions and this confirms the remarks of von Friedrich, Loy and Muller (2012).

Due to fact that we have analyzed only one part of the fertilizer market (only nitrogen fertilizers), we can only partly confirm the statistic presented by Riester (2015) which shows that German farmer's expenses for fertilizers grew in the analyzed period dramatically. The neural network model, used in this paper, which process the second accuracy result should be further researched.

Conclusion

Our results suggest that all models are suitable for forecasting fertilizer price. But the most accurate models were univariate AR(6) times series model and neural network model. Neither of our models did well on forecasting outlier. Proposed neural network model should be research more deeply, in order to verify our results. Used statistical methods can also be applied to forecast fertilizer price in other countries, but first they must be tested with data of these countries.

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*COMPETITIVENESS DEFINITIONS' AND CONCEPTS QUALITATIVE
CONTENT ANALYSIS*

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Abstract

Purpose of the article is to illustrate the use of qualitative data analysis software (QDAS) as a research tool implementing qualitative content analysis of textual material of competitiveness literature. The scientific aim is to summarize and quantify the most often used keywords, terms and patterns of expression in competitiveness definitions, what explains the meaning, measurement and determinants of competitiveness.

Methodology/methods Literature review resulted with altogether, chronologically 125 competitiveness definitions and concepts were allocated within the timeframe between 1949-2013 were subdivided in country, regional, industry, firm/company and individual levels of research. Some authors have generated more than 1 definition, some definitions are published by more than 1 author, and some definitions cover 2 areas of competitiveness research in a definition. In the article were included only 34 most recent competitiveness definitions (1998-2013) and cited sources (due to page limit A. Appendix), as selection criteria was used: the most often applied words and terms in the content. Full list of competitiveness definitions will be included in further research articles and doctoral dissertation.

Scientific aim Identify the most often used keywords and terms in competitiveness definitions and concepts, summary of main word meaning used to define competitiveness and factors at the given context and objective with the help of software.

Findings 837 words were derived from definition content mentioned at least one time, if the word “competitiveness” is taken away from result list, then the top ten is as follows: 1st place “country” (mentioned 62 times) ; 2nd “ability” (57 times); 3rd “products” (56), 4th “firm” (45); 5th “nations” (39); 6th “international” (38); 7th “markets” (37); 8th “economic” (34); 9th “level” (31); 10th “services” (24), “factors”(23)”. Most often the scale of competitiveness is defined (country, company, markets or its synonyms), competitiveness is viewed as ability, provide or achieve (70 words), products and services (98) are important measure; factors, terms and conditions (52 words), finally very often researchers competitiveness associates with growth, increase, high and better (54 words), and it means welfare and quality of living (38 words). Competitiveness factor and determinant presence definition is less obvious, general message is that certain institution, policy and factor (human or physical) conditions must exist, but not specifically defined as special skills (3), knowledge (0), innovations (5), capabilities (4), exports (5), owners (2), human resource (8), strategies (1), information and communication (0), customers (7), competitors (11), business (9), academic (1), political (2) could be explained by intentional types of definitions providing the essence of the term, but not the every detail of it.

Conclusions The term competitiveness is associated with firm or company level in equal frequency as to country and nation level, but sector, industry and regional competitiveness is even less present. Evident is the fact that “Competitiveness “is the quality and ability to achieve something, on the international global level with their products and services. The results might differ if the whole articles would be analyzed, since the definitions very often lack the context, purpose and main variables of the research what lead to the conclusion and finally to definition of competitiveness. Further research using software content analysis with more specific focus will be performed, on industry and company level, and factor specific and with coding of data of the textual material and extensional definitions. Additionally to above mentioned competitiveness factor intensity and synergy is planned to research.

Keywords: Competitiveness, definitions, concepts, content analysis, factors

JEL Classification: M15, M21

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Introduction

Ambastha, Momaya (2004) in their review of competitiveness theory summarized that: "Competitive-ness is a multidimensional and unclear concept. It can be observed from three different levels: country, industry, and firm level. Competitiveness has been delineated by many researchers as a multidimensional and relative concept (Spence and Hazard, 1988). "Competitiveness could be defined as the ability of firm to design, produce and or market products superior to those offered by competitors, considering the price and non-price qualities (D'Cruz, 1992). "The support of this is that different attributes of competitiveness changes with time and context (Ambastha and Momaya, 2004). Competitiveness originated from the Latin word," *competere*", which means involvement in a business rivalry for markets.

Balzaravičienė, Pilinkienė (2012) argues that has become common to describe economic strength of an entity with respect to its competitors in the global market economy in which goods, services, people, skills, and ideas move freely across geographical borders (Murtha, Lenway, 2007; Saboniene, 2009; Malakauskaite, Navickas, 2010)."

In the literature the word "competitiveness" conveys a different meaning when applied to an individual firm or an individual sector or economic activity within a country or region. Lado et.al. (1997) notes that "a competitive paradigm has dominated strategic management theory, research, and practice (Barney, 1986; Caves, 1984)".

A systematic search of the academic literature demonstrates that while competitiveness is a major issue (Dunning, 1995; Porter, 1990), it has still not been well defined (Martin, Westgren and Duren, 1991; Connor, 2003). Yet competitiveness remains an important measure of „benchmarking economic performance" (Dunning, 1995). Cook and Bredahl (1991) argued that competitiveness can be looked at from the view-point of geographic location, product, or time. The active development of competitiveness research demands the more often and specific analysis of with contemporary factors.

(Reiljan et al.2000) in their paper are continuing the thought of fuzziness of the concept "Competitive-ness seems to be like any other human quality that everybody strives for, but what is difficult to define and even more difficult to achieve, unless one has it inborn. (Kitzmantel, 1995)". (Reiljan et al., 2000) considers that uncertainty in definition and terminology in competitiveness studies should not limit the use of the term in academic research and analysis of the different levels of investigation. More detailed thought is that competitiveness is a reassessment of a extensive selection of indicators that jointly provide a very valid focus (Cohen 1994, p. 197).

Following the thought our objective in this article is to summarize the definitions and concepts defined, influenced by huge amount of factors and determinants depending on the scale, focus and objectives of the research. The aim of this article is to summarize up to date literature concerning the topic related issues.

How competitiveness is defined? What factors and determinants are relevant in order to achieve relative competitiveness, and finally, how we can measure the competitiveness, the answer is in essence of the definitions and main concepts. Software-assisted qualitative content analysis is one approach how to analyze the textual content. Despite the fact that there is wide range of content analysis software and it requires the specific knowledge and experience

Content analysis is the quantitative and/or qualitative analysis of a text document and its primary purpose is to identify patterns in the text (Trochim, 2001). Content analysis is a research methodology which examines textual data for patterns and structures, singles out the key features to which researchers want to pay attention, develops categories, and aggregates them into perceptible constructs in order to seize text meaning (Gray and Densten 1998; Shoemaker and Reese; 1996).

Content analysis is a general term for a number of different strategies used to analyse text (Powers and Knapp, 2006). It is a systematic coding and categorizing approach used for exploring large amounts of textual information unobtrusively to determine trends and patterns of words used, their frequency, their relationships, and the structures and discourses of communication (Mayring, 2000; Pope *et al.*, 2006; Gbrich, 2007).

By using content analysis, it is possible to analyse data qualitatively and at the same time quantify the data. Content analysis uses a descriptive approach in both coding of the data and its interpretation of quantitative counts of the codes (Downe-Wamboldt, 1992; Morgan, 1993).

Weber (1990, p. 9) described content analysis as "a research method that uses a set of procedures to make valid inferences from text." This method allows the systematic analysis of text in order to conceptualize and identify important features of a given concept (Billore et al, 2013).

This is characteristic of the situation in which qualitative content analysis finds itself. For example, as Krippendorff (2013) points out, "all reading of texts is qualitative, even when certain characteristics of a text are

later converted into numbers" (p.22).Kuckartz (2014, p.3) points out, "both a quantitative analysis of qualitative data, as well as a qualitative analysis of quantitative data, are possible. Thus, there is no reason to suspect a deep divide between the qualitative and quantitative perspectives." For instance, subject to the research question, QCA can include quantitative elements such as word frequency analysis (Mayring, 2000). In other words, QCA allows a focus on quantitative aspects of the research data that are most relevant to the research question (Schreier, 2012).

Software-assisted qualitative data analysis

Numerous scholars have discussed the advantages and limitations of using qualitative data analysis software packages (QDAS, also referred to as CAQDAS) in academic research. Proponents hail them for faster and more efficient data management (Bazeley, 2007, 2009; Bringer, Johnston & Brackenridge, 2006 on the other hand, lament the high financial cost of some software packages and the considerable time and effort required to learn them (Bergin, 2011; Thompson, 2002), and that they might entice the researcher to put too much trust in the tools provided, thereby potentially generating unrealistic expectations (Macmillan, 2005; Macmillan & Koenig, 2004; Mangabeira et al., 2004).

Understanding of terms- definition, factor and determinant

A definition is a statement of the meaning of a term (a word, phrase, or other set of symbols).(Bickenbach, and Davies (1996) Definitions can be classified into two large categories, intentional definitions (which try to give the essence of a term) and extensional definitions (which list every single object that a term describes).Lyons (1977) A term may have many different senses and multiple meanings, and thus require multiple definitions. Dooly (2006).In the randomly selected definitions and concepts both types of definitions were present. Since term "competitiveness" describes the outcome or result of different objects, factors or determinants what eventually could help us to achieve the goal. According to Merriam-Webster dictionary (<http://www.merriam-webster.com/>), we can define factor-: "something that helps produce or influence a result: one of the things that cause something to happen".

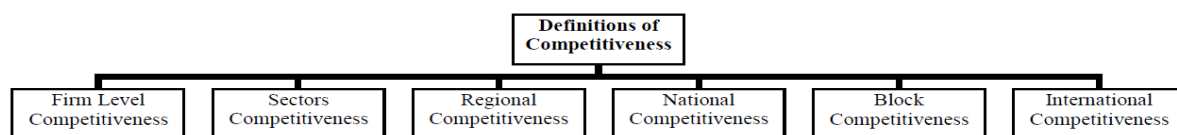
Definition of determinant –"an element that identifies or determines the nature of something or that fixes or conditions an outcome" (Collins English Dictionary 2003)

In this study, content analysis of the "Competitiveness" definitions and concepts from literature review were taken in order to identify the main keywords and terms , which can be used to summarize as main factors and determinants of competitiveness. 125 competitiveness definitions were collected from scientific articles and research organizations like WEF (World Economic forum), OECD (Organization of Economic Cooperation and Development) and others.

1 Literature review

The long history of competitiveness concept evolution and merge of economics and management sciences in 1990s might be one of main factors of the general application of the term. Competitiveness is a multidimensional, fuzzy concept (Budd and Hirmis 2004, Porter and Ketels 2003). Competitiveness can be viewed in terms of the level of investigation: Macro-, meso- and microeconomic approaches all define competitiveness differently (Buzzigoli and Viviani 2009). On the country level, competitiveness, the ability of a country to increase the wealth of its citizens, is different from comparative advantage, the relative advantage of a country to another country due to differences in relative production costs (Porter 1990, 1992, Kitson et al 2004).

It means different to different people depending on the context and level. It can be looked at three different but inter-related levels: country (international, block national), industry (sector), regional and firm level, in some sources it is also mentioned individual level of competitiveness in context of interpersonal interactions. Trait competitiveness has been defined as the "enjoyment of interpersonal competition and the desire to win and be better than others"(Spence and Helmreich 1983, p. 41). In general, highly competitive persons will do almost anything for money (Furnham et al. 1994), and hypercompetitive people specifically value power, wealth, dominance, and influence over others (Ryckman et al. 1996; Ryckman et al. 1997).



Source: Balkyte and Tvaronavičiene (2010)

Fig.1.The diversity of competitiveness's definitions and levels

In accordance with Porter's benchmarking input, there is agreement amongst researchers that firms- not nations and regions- compete (Budd and Hirmis, 2004; Porter, 1990). However, the same line of research state that firm level competitiveness analysis should be observed within the context of national or local environment (Nelson, 1992). This approach accept that the macroeconomic or industry external environ-ment such as distinctive characteristics, institutions, and policies influence the performance of the firms in a given geographical location.

Balzaravičienė and Pilinkienė (2012), have assessed for a firm, competitiveness is the ability to pro-duce the right goods and services of the right quality, at the right price, at the right time. It means meeting customers' needs more efficiently and more effectively than other firms do (Edmonds, 2000, p. 20). Gen-erally, competitiveness is the ability of an organization to compete successfully with its commercial rivals (Law, 2009). In conclusion of the above mentioned we could state that competitive countries are determi-nants of competitive environment for competitive firms and industries, and vice versa is true international-ly tested companies form advanced industries as a fundamental part for sustainable competitive countries.

2 Company level competitiveness

Viewing competitiveness on a firm level, some definitions refer to the lower cost production principle (Buzzigoli and Viviani, 2009). In contrast, Porter (1992) considers competitiveness as —...a function of dynamic progressiveness, innovation, and ability to change and improve, also cited by Kitson et al 2004). While Porter and Krugman are frequently in opposing positions, they agree that the core principle of competitiveness is efficiency (Martin, 2005).

Firms compete in the market just as industries in different countries compete in the world market, but, given the nature of international exchanges, the notion of competing countries does not make sense (Krugman, 1994).

Summarizing the evolution of competitiveness theory and academic literature stemming from science of economics the focus was national, country level of competitiveness, later on in early 90s starting from Porter and others started to emphasize the importance of company level competitiveness as popular research area of management studies.

Feurer and Chaharbaghi (1994) have proposed a holistic definition of competitiveness, taking into account the sustainability: "Competitiveness is relative and not absolute. It depends on shareholder and customer values, financial strength which determines the ability to act and react within the competitive environment and the potential of people and technology in implementing the necessary strategic changes. Competitiveness can only be sustained if an appropriate balance is maintained between these factors which can be of a conflicting nature.

A review by Waheeduzzaman and Ryans (1996) also pointed out that the competitiveness concept involves different disciplines, such as comparative advantage and/or the price competitiveness perspective, the strategy and management perspective, and the historical and socio cultural perspectives. Competitiveness can also be treated as a dependent, independent, or intermediary variable, depending on the perspectives from which we approach the issue. This variety of levels and approaches actually reflects the wide applications of this concept.

While competitiveness is a popular research topic amongst scholars economics and business, our knowledge is still limited on the exact meaning, content and factors of competitiveness (Chaudhuri and Ray 1997, Man et al 2002).

Competitiveness concept is a popular research topic amongst scholars of economics and business, our comprehension is still insufficient on the accurate meaning, content and factors of competitiveness (Chaudhuri and Ray, 1997, Man et al., 2002).

Competitiveness research studies view factors elements that can affect and explain the competitiveness success and the facilitators of competitiveness. Despite there is a whole strand of scientific literature on competitiveness, alas, unanimous agreement about definition or model of competitiveness has not been reached (Balkyte, Tvaronavičienė, 2010).

International competition and so as competitiveness term at the firm level has changed over the last dec-ades because of the changing frameworks of world commerce, globalisation of the global economy, rapid dissemination of technology, fast development of technology, speed of was amount of information , and rapid increase of the multinational organisations There is focus on competitiveness issues among firms in global markets that has restarted research attention in international competitiveness at a country level (Porter, 1990, 1998, 2003; Rugman 1990, 1991; Dunning, 2000), and later further studied by Aiginger (2006), Grilo and Koopman (2006), Kohler (2006), Ketels (2006), Siggel (2006) and Stone and Ranchhod (2006).

There are several schools of thought mainly arguing on which level, process and dimension the com-petitiveness studies would be more precise and meaningful, as well as what are the factors which are more likely than others lead to more competitive advantages in development of economic entity.

3 The process and result of a content analysis

The qualitative result of the competitiveness definition material was transformed in quantitative data and graphically exhibited with the help of the Nvivo software. Manually was done the synonym and word selection with similar context and meaning.

Table 1. Key processes of content analysis (partially applied to this research).

Key processes	Content analysis: sampling and data collection
Defining the analysis unit-the word, paragraphs from articles, phrases etc.	The analysis unit: Competitiveness definitions in scientific articles
Sampling-selection of the study units, which are representative for the research.	Scientific articles dealing with concept and definitions of competitiveness
Reduction – reduction of the complexity of the content of the data analyzed	Codification to key words and phrases
Deduction - contextual phenomena are analyzed to identify the context of research results.	Expected results :identification of factors and determinants to affect or sustain competitiveness
Narration - the results are reported using narrative conventions	Consolidation of interrelated determinants and factors in clusters or groups determining the competitiveness

Source: Altheide, 1987; Krippendorff, 2004



Fig.2 Word frequency in competitiveness definitions

The Appendix B. exhibits the figure B. with the word query; from what the word cloud in Fig.2 was designed by Nvivo software. The bigger size of the word means higher frequency.

Results

Most often the words and expressions originated from the word –“compete”. 249 times were used in selected definitions and concepts. 135 times the words and expressions were explaining the context of state, nation, country, economy or regions; 67 times authors emphasized the global, world, international scale of the competitiveness concept; 80 times the definitions of competitiveness were associated with such qualities as ability to achieve, and provide. 98 times scientists were talking about goods, services and products, what proves that company, firm, organizational level is quite popular 87 times used; 52 definitions proved that the term was associated with markets, customers, share etc. Factors, terms, definitions were mentioned 53 times, definitions, concepts and define activities , what should be obvious since text content was derived from definitions and concepts; 61 times the definition was associated with the trend or description of development, growth, increase, high; 37 word patterns were covering quality, standard and measure dimension of competitiveness; 38 times at the national level competitiveness was argued together with welfare, citizens, people and living as objective of such achievements. 48 words and phrases were associated with performance, profitability, success and efficiency;

As quite a surprise is low-resource, asset count 20, which could be explained by quite early stage of competitiveness research stage definitions; 34 times the definition expressed the different views, use, seen, meaning what confirms the statement of concept multidimensionality and wide use and understanding of competitiveness term.

Conclusions

The literature review and articles analysis provided the oversight how wide application, meaning and origin of resources on competitiveness concept exist up to date. The early definitions try to grasp the scale and the basic

meaning of the competitiveness concept. Later stage research focuses on what is necessary to have in order to achieve and sustain the competitiveness with the focus on resources and strategies of products and services, most recent competitiveness research involves specific internal factors as capabilities, competencies and skills of organizations. That provides empirical explanation, why definitions do not contain wide selection of competitiveness factors as expected, but just basic meaning and explanation of concept.

The qualitative content analysis of competitiveness definitions provided the general insight identifying specified characteristics, and what words and terms are used most frequently. Results are quantified in word groups or clusters with similar meaning and sense of most often textual constructs. The software application with certain preconditions is applicable tool for qualitative content analysis. Such words as compete, competitiveness, definitions, define, author names, dates, research organizations should be excluded from the result list. Also the whole content analysis process is not visible by other readers or peers and that could create the lack of trust and transparency, might reduce credibility and confidence of obtained data and results.

The further research could focus on coding of the words and phrases, and interpretation of quantitative counts of the codes. The objective of such content analysis is to provide precise word and term combinations for detailed summary of factors affecting competitiveness in specific context and level of research, for example specific industry or type of companies with specific ownership structure. The future research must focus on the particular dimension for example country or company level for more precise content analysis research. The lack of academic textual material with high degree of focus may cause the limitations of such qualitative content analysis.

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*LABOUR MARKETS IN THE CENTRAL AND EASTERN EUROPE -
COMPARATIVE ANALYSIS*

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Abstract

Purpose of the article The main purpose of this paper is making comparison of labour markets indicators among the countries in the region of Central and Eastern Europe, which joined European Union in 2004. The selected countries are: Czech Republic, Estonia, Latvia, Lithuania, Hungary, Poland, Slovakia and Slovenia. Multivariate analysis of labour market indicators showed how the position of labour markets of the analysed countries differs and how it has changed over eleven years, after entering the EU.

Methodology/methods The paper was based on both the desk-research of literature connected with labour market institutions as well as the analysis of labour market indicator through usage of principal components analysis and multivariate analysis. The data was gathered from the databases of Eurostat. The choice of meaningful variables was made by factor analysis. There were identified the key factors, which determined the labour market situation in the selected countries in two years – 2003 and 2014.

Scientific aim The conducted research can contribute to fill the loophole of the discipline of labour economics in the area of determining the trajectories of labour markets developments in transition economies.

Findings Poland is the example of transition economy which significantly improved its labour market situation in 2014 compared to 2003. On the other hand Slovenia's position in that area among the CEE countries seems to be worse eleven years after joining the EU than before that time. Estonia and Czech Republic have been the leaders in terms of labour market situation both in 2003 and 2014.

Conclusions It can be noticed the high level of heterogeneity of the labour markets of the transition CEE countries. However, in 2003 a clear relationship in terms of selected key factors occurred in the case of Lithuania, Latvia and Estonia. In contrast, in 2014 a cluster of Poland and Hungary emerged. The Baltic States' cluster was left by Estonia as it improved its labour market situation in comparison with Lithuania and Latvia.

Keywords: labour market policy, labour market indicators, Central and Eastern Europe, multivariate analysis, comparative analysis.

JEL Classification: J21, J22, J80, J81.

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Introduction

Central and Eastern European (CEE) countries represented comparable socio-economic conditions as they experienced centrally planned management and instituting systemic change. Those economies, entering the transition period, faced problems of fall in the level of economic activity and as results decrease in employment and emergence of cyclical and structural unemployment. The process of implementation of market economy required the initiating of comprehensive reforms. The transition of the most of CEE countries has shown a significant progress, which was appreciated by international institutions. The group of CEE economies as Czech Republic, Estonia, Latvia, Lithuania, Hungary, Poland, Slovakia and Slovenia joined the European Union in 2004. After over decade of functioning in the EU structures, it occurs that the level of development of those countries, also in terms of labour market situation differs substantially.

The main purpose of this paper is comparing the labour markets indicators among the transition countries in the CEE region, which joined European Union in 2004. There were analysed the data just before entering the EU - in 2003 and the most recent available data from 2014. Multivariate analysis of labour market indicators showed how the position of labour markets of the analysed countries differs and how it has changed over eleven years, after entering the EU.

1 Literature overview

Nowadays, after more than twenty years of transition, post-socialist countries can be seen as much more diversified in terms of the economic performance and the institutional framework than they were at the beginning of the transition process (Pilc, 2015). The reason is that those countries went through different paths of economic reforms. It also concerns the labour market situation as significant changes have been implemented on the Central and Eastern European labour markets both in the transition period and after that time.

The different pathways of social and economic reforms have been chosen by CEE countries already in the transition process. Poland, Czech Republic, Slovakia, Estonia, Latvia, Lithuania are often seen as the economies representing the shock therapy model. Hungary and Slovenia trod more cautiously, in part because they had more liberalized economies at the start of the transition and less of a need for rapid change. So as their transition processes can be treated more as the examples of the gradualist model (Roaf et al., 2014; Veebel, Namm, Tillmann, 2014).

With the advent of the capitalist market in transition economies, there was noticed the significant fall in demand coming simultaneously from various sources, which was translated into a sharp fall in GDP and an even sharper one in industrial production. The demand fall caused the substantial decreases in employment and economic activity levels as well as in the occurrence of informal employment (Cazes and Nesporova, 2003). This fall in output, with a lag, was also reflected in the appearance of transition cyclical unemployment resulting from the reduced level of economic activity (Winiecki, 2008). Moreover, the transition economies were characterised by the significant excess supply of low-skilled workers (demanded in generally heavy-industry oriented socialist economies) and by a growing demand for better skilled prospective employees, with qualifications more suitable for service and consumer oriented market economy (Winiecki, 2008). Therefore, in order to adapt to these changes, governments in post-socialist countries had to reform the labour market institutional framework substantially.

During the transition period, the CEE countries gradually implemented the reduction of the duration and amount of unemployment benefits as well as tightening of eligibility criteria (de Koning, 2007). Moreover, the labour market policy (e.g. in terms of wage negotiations) became more decentralised, the minimum wages were decreased. In the frame of macroeconomic policy, some of CEE countries (e.g. Slovenia, Estonia, Czech Republic - Brejc, Diamantopoulou, 2000; Sikulova, Frank, 2014) attracted foreign investors, provided economic incentives for job creating projects and re-oriented the economic activity from industrial production to services.

The situation on labour markets in the transition countries of Central and Eastern Europe has been determined by social-economic changes influencing both the labour demand and labour supply. They include, inter alia, the level of market-orientation of the economy (implemented mainly by the privatisation of state-

owned companies and enterprise restructuring - Pilc, 2015), fiscal and monetary policy, investments in public infrastructure (e.g. transportation infrastructure), the level of expenditures on social benefits³⁴.

In order to accommodate the new labour market demands, CEE countries' policy had to adjust not only to the new economic conditions but also to demands resulting from preparation for the EU membership. They had to adapt their employment systems so as to be able to implement the European Employment Strategy. The EU concepts and policies differed significantly from the social policy of transition countries. They are expressions of consensus reached between 15 old EU member states based on decades of welfare development (Szalai, 2002). However, eight CEE transition countries, analysed in that paper, meet the criteria and joined the EU in 2004.

2 Scientific Method

The situation on the labour markets of the selected CEE countries was compared by the usage of two multivariate techniques: factor analysis and principal components analysis. Those techniques have already been used for conducting comparative analysis of the European labour markets (e.g. Savić, Zubović, 2015).

Factor analysis, on the basis of the principal components analysis allowed reducing a significant number of variables to a meaningful, interpretable, and manageable set of factors (Myers, Mullet, 2003). The main objective of principal components analysis is mainly the analysis of the dependence structure, ensuring the simplicity of the description of that structure (Balicki, 2009).

Manly (2005) indicates that factor analysis is interdependence technique that seeks group of variables that are similar in sense that they are “moving together” and the basic idea is to identify the similar variables among great number of labour market variables and group them together. Each group will represent a key factor on the Central and Eastern European labour market.

Usage of those techniques enables of visual presentation of national labour markets in the analysed region. It visualise the position of selected countries on the labour market in terms of extracted key factors. The countries with similar labour market indicators can be grouped together. This will enable the possibility to see the position of each country in the comparison with other CEE countries.

The data were collected from Eurostat statistical database, gathered by Labour Force Surveys conducted in each country in the years 2003 and 2014. Data cover 40 different labour market variables: mainly activity rates, employment rates, inactivity rates, and unemployment rates across age groups and genders. The analyzed data came from 2003 - the period just before entering the EU by the selected CEE countries; the second time limit - 2014 represented the most recent available data.

3 Research results

On the basis of factor analysis of data from 2003 three factors were extracted:

- Factor 1: Employment and Unemployment (employment rate of recent graduates, NEET rate, youth employment rate, youth unemployment rate, long-term unemployment of females, unemployment rate of females, long-term unemployment of males, unemployment rate of males, unemployment rate, long-term unemployment rate). This factor explains around 53% of variation on the labour markets.
- Factor 2: Activity and Inactivity (employment rate of older males aged 55-64, employment rate of females, inactivity rate of females, labour force participation rate of females, employment rate of males, inactivity rate of males, labour force participation rate of males, employment rate). This factor explains additional 31% of variation on the labour markets.
- Factor 3: Employment of older population (employment rate of older aged 55-64, employment rate of older females aged 55-64). This factor explains additional 8% of variation on the labour markets.

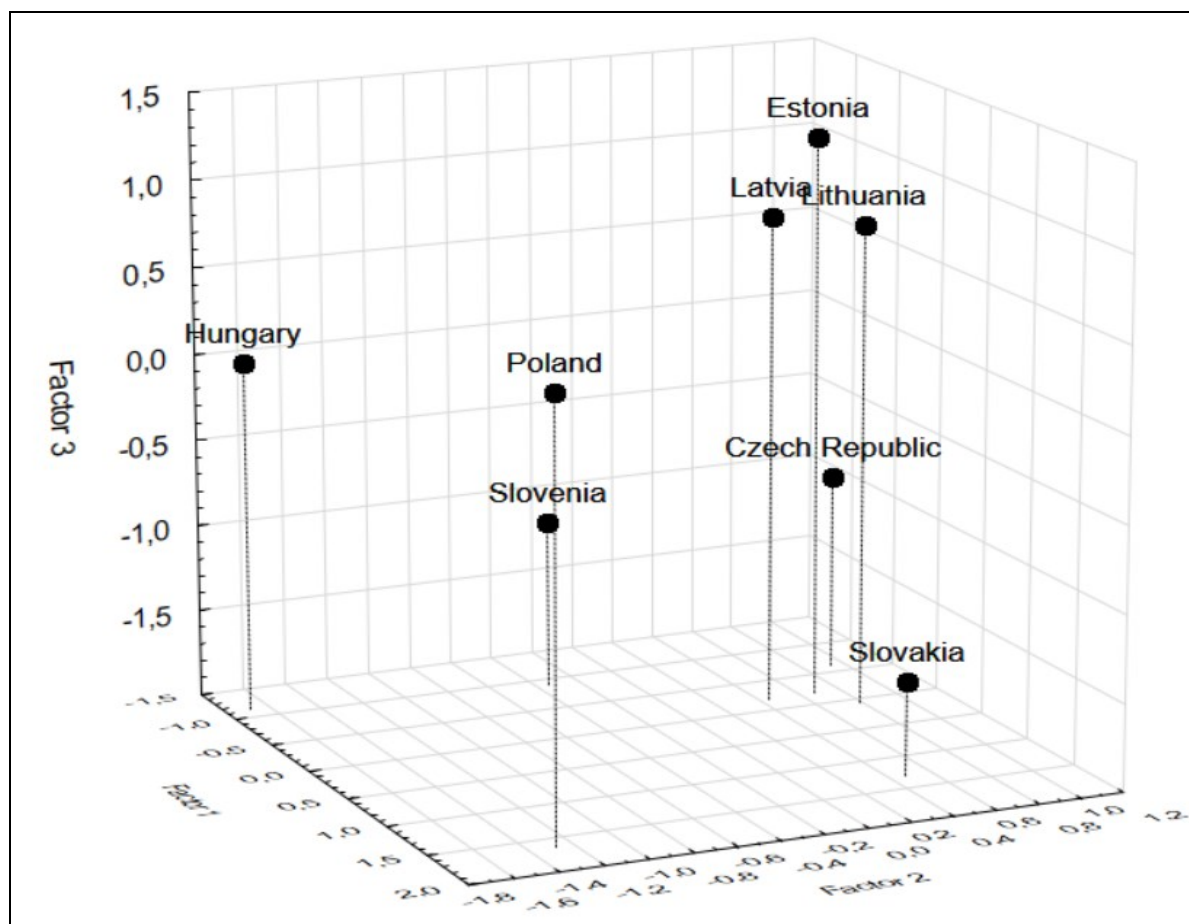
The following table shows that 92% of variation among data was covered with the above three factors.

³⁴ It does not apply, to a large extent, unemployment benefits as research show that they have modest negative effect on labour market efficiency (Svejnár, 2002). The structure and accessibility of social assistance benefits (like permissive retirement policies or a generous child-care scheme) influence professional activity as they encourage withdrawal from the labour force (Rollnik-Sadowska, 2014; de Koning, 2007). It creates a problem of inactivity in post-socialist economies due to the social expectations of supportive welfare state and low level of conditionality.

Table 1 Eigenvalues (2003) Extraction: Principal components

Factor	Eigenvalue	% Total - variance	Cumulative - Eigenvalue	Cumulative - %
1	10,51286	52,56431	10,51286	52,56431
2	6,28281	31,41407	16,79567	83,97837
3	1,59812	7,99058	18,39379	91,96896

Source: own study.



Source: own study based on the Eurostat data.

Figure 1 Conceptual map – distribution of countries according to the selected factors (2003)

If we look at the Figure 1, we can see that all three factors from 2003 show significant differences among selected countries. Analysing factor 1, the worst situation connected with employment and unemployment was in Poland and Slovakia. At the same time the best employment and unemployment indicators of the youths, females and males were noticed in Hungary and Slovenia, a bit worse in Czech Republic³⁵. The factor 2 of activity and inactivity shows that once again Poland was at the worst position among the analysed countries. However, this time, Hungary together with Poland had the lowest activity rates and the highest inactivity out of CEE countries. The best situation was in Estonia, Czech Republic and Lithuania. Taking into account the employment situation of the eldest (factor 3) it can be noticed that in 2003 the worst position of people aged 55-64 on the labour market was in Slovakia and Slovenia as in those countries were the lowest employment indicators of oldest cohorts. In 2003 the best employment indicators of people aged 55-64 were held in Estonia.

³⁵ In Czech Republic in comparison with the rest of analyzed countries, the indicators of employment and unemployment among man was better than among young people and women.

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Summarising, the above presented analysis of labour market indicators from 2003, just a year before joining the EU by the analysed CEE countries, it can be noticed that the worst labour market situation was in Poland and Slovakia. At the same time, the best indicators were held in Estonia and Czech Republic.

On the basis of factor analysis of data from 2014 there were also extracted three factors:

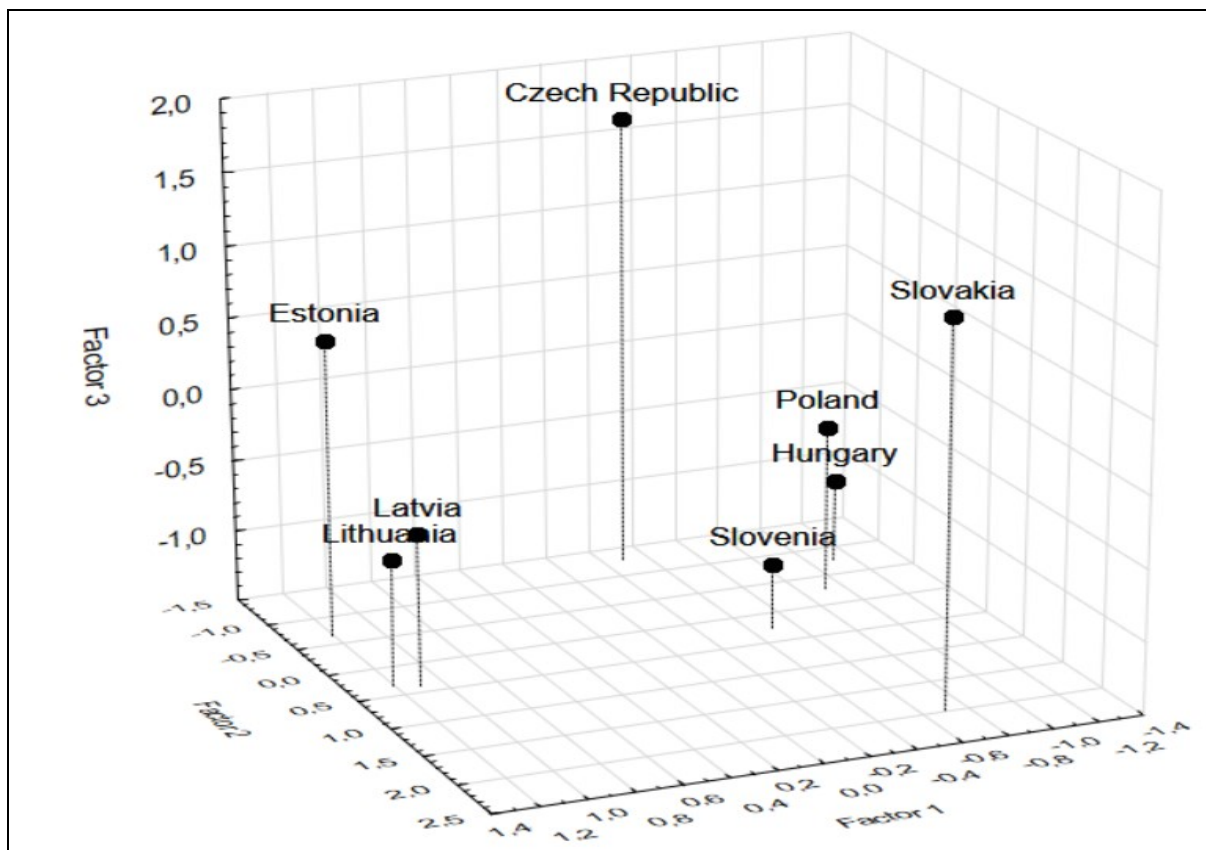
- Factor 1: Activity and Inactivity (youth employment rate, employment rate of people aged 55-64, employment rate of older females aged 55-64, employment rate of females, inactivity rate of females, labour force participation rate of females, employment rate). This factor explains around 53% of variation on the labour markets.
- Factor 2: Unemployment (youth unemployment rate, long-term unemployment of females, unemployment rate of females, long-term unemployment of males, unemployment rate of males, unemployment rate, long-term unemployment rate). This factor explains additional 25% of variation on the labour markets.
- Factor 3: Activity and Inactivity of Males (employment rate of males aged 55-64, employment rate of males, inactivity rate of males, labour force participation rate of males). This factor explains additional 11% of variation on the labour markets.

The following table (table 2) shows that 89% of variation among data was covered with these three factors.

Table 2 Eigenvalues (2014) Extraction: Principal components

Factor	Eigenvalue	% Total - variance	Cumulative - Eigenvalue	Cumulative - %
1	10,55200	52,75998	10,55200	52,75998
2	5,03759	25,18796	15,58959	77,94794
3	2,21402	11,07011	17,80361	89,01805

Source: own study.



Source: own study on the Eurostat data.

Figure 1 Conceptual map – distribution of countries according to the selected factors (2014)

In 2014 the position of selected to analysis CEE countries on the labour market has changed significantly in comparison with 2003.

The factor 1 representing activity and inactivity of mainly the most vulnerable groups on the labour market as youths, the elders and females shows that the worst situation out of analysed countries was in Hungary and Poland. The best situation among the vulnerable groups on the labour market was in Baltic countries. In terms of unemployment (factor 2) the highest rates of unemployment in 2014 were in Slovakia. At the same time the least problem with unemployment took place in Czech Republic, Estonia and Hungary. The situation of males in the area of their labour market position (factor 3) was the worst in Slovenia and it was by far the best in Czech Republic and also good in Estonia.

In 2014 the leaders in the labour market situation were definitely Czech Republic and Estonia. At the same time Slovakia represented the worst situation taking into account the selected factors.

4 Discussion

In the analysed years - 2003 and 2014, the factors, which explained the majority of variation on the labour market were connected with the same phenomena - employment/unemployment and activity/ inactivity. However, in 2003 the leading position reached employment indicators and to its opposition the unemployment rates and in 2014 there were dominating the activity indicators (both employment rates and labour force participation rates) combined with inactivity rates. It proves that to reach wide view of the labour market situation, besides the basic indicators as employment, unemployment and activity rates, there should be also considered the level and reasons of inactivity of potential labour force. In the analysed scope of eleven years the main difference was in the factor 3 as in 2003 the 8% of variation on the labour market was determined by the employment of the elders and in 2014 - 11% of variation was set by activity and inactivity of males. In the analysed years, there were changed the groups describing the variation of labour markets in Central and Eastern European countries. On the one hand it could be connected with the effects of inflow of the EU funds on the improvement of the labour market situation of people in immobile age and older. At the same time, economic crisis and its effects on the labour market were significantly harmful for men, who are the main part of labour force in the production sector which recorded the largest decline.

Czech Republic in 2003 reached the average level of analysed factors in comparison with the rest of the CEE countries. However, in 2014, that country obtained the leading position (mainly because of low unemployment and very good males' situation). Estonia in both analysed years had one of the best labour market situations among the CEE countries.

Hungary before entering the EU reached low unemployment indicators but at the same time it had low employment and high inactivity rates. Eleven years later Hungary maintained low employment and high inactivity. Simultaneously, the country presented low level of unemployment. The males' situation was worse than in the most CEE countries.

Lithuania had a bit better indicators than Latvia but generally in both years the indicators of those Baltic states were comparable. In 2003, those countries reached good position in the area of activity and inactivity (which was maintained in 2014) and in the situation of the elders. The favourable indicators of older cohorts in Baltic countries can be also connected with low retirement benefits.

Poland as it had the worst labour market situation in 2003, it improved its position in 2014 mainly thanks to the moderate level of unemployment (however there should be taken into account hidden unemployment in rural areas) and stable males situation.

Slovakia went through comparable path to Poland. However, it reached better activity/inactivity indicators in 2003 and worse unemployment levels in 2014.

Slovenia is the country which seems to have better labour market situation before entering the EU rather than after eleven years of participation. Currently Slovenia has the worst indicators of males. It could be connected with the continuing euro zone crisis, which after the downturn in the industry-dependent sectors brought a negative impact on the labour markets. Moreover, crisis in Slovenian banking sector contributed to the recession in that country substantially (Zuokui, 2013).

Conclusion

Visualisation of the position of the selected CEE countries on the labour market in terms of extracted key factors allows for determining the clusters of countries. Generally, it can be noticed the high level of heterogeneity of the labour markets of the transition CEE countries. However, in 2003 a clear relationship in terms of selected key factors occurred in the case of Lithuania, Latvia and Estonia. In contrast, in 2014 a cluster

of Poland and Hungary emerged. At the same time Estonia left the rest of the Baltic states when it comes to the labour market indicators as it improved its situation in comparison with Lithuania and Latvia.

Summarising the conducted analysis of labour market indicators in the CEE countries, Poland is the example of transition economy which significantly improved its labour market situation in 2014 compared to 2003. On the other hand Slovenia's position among the CEE countries seems to be worse eleven years after joining the EU than before that time. Permanent leaders in terms of labour market situation both in 2003 and 2014, despite the passage of more than a decade from joining the European Union and the existence of economic crisis, stay Estonia and Czech Republic. The question is what has ensured the success of those countries in the field of labour market? Have it been implemented labour market reforms and the development of labour market institutions, whether attracting foreign investment and strengthening economic cooperation with neighbouring powerful economies of the Nordic countries for Estonia and Germany for Czech Republic, which led to increased labour demand?

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*INFLOW OF FDI IN AUTOMOTIVE INDUSTRY INTO MACEDONIAN
ECONOMY AND POSSIBILITY OF SMEs TO ENGAGE IN THEIR
SUPPLYING CHAINS*

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Abstract

Purpose of the article Based on the previous and current research referring to the relationship and benefits that arise from the FDI inflow to host companies, the paper is trying to analyze whether and to what extent the Macedonian companies have succeeded to catch the opportunity to engage as suppliers of the FDIs in automotive industry into Macedonian economy. The aim of the article is solely to analyze the linkages between FDIs and host suppliers and the potential for their engagement in the FDIs value chain.

Methodology/methods Within the study it is developed a model that identifies the factors that influence the output of intermediary suppliers in automotive industry in Macedonian economy. Despite the FDIs, the model also include some other factors like human and technology and how they influence on the output of the host intermediary suppliers. The study is based on an analysis of the input-output tables showing the dependency and flows between different sectors of production within the economy. Using the regression analysis it is identified contribution of FDIs inflow in automotive industry to the output of intermediary suppliers from the separate sectors engaged in the production process of FDIs.

Scientific aim The paper reveals whether the Macedonian businesses have achieved in establishing and servicing the supplying linkages with FDIs as a crucial precondition for spillover process to arise.

Findings The results suggest on an increased output of the host intermediary suppliers and the usage of local content in the production.

Conclusions The paper implies that the inflow of FDIs should be seen as a factor that contribute in increasing the competitiveness of the host suppliers and as a way of upgrading the capabilities of local SMEs.

Keywords: FDI, automotive industry, linkages, intermediate, suppliers, competitiveness

JEL Classification: F21, F23, O19

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Introduction

The relation between FDI and their effects on host economy is an issue of particular research interest. This relation can be considered from different research approaches related to the impact on employment, export, transfer of technology, skills and knowledge, amount and intensity of linkages between FDI and local suppliers.

Inflow of foreign direct investment (FDI) is considered as one of the main priority for development of developing countries. They are potentially seen as a source of important productivity externalities for the host economies. Not just as a source of capital, additionally FDI may come with valuable technology and know-how and encourage linkages with local firms that can help to push them in supply chain (Alfaro and Charlton, 2007). FDI can create or enhance opportunities for value creation by their decisions to invest in particular location (Pavlinek and Zizalova, 2014)

The aim of this article is to analyze the relations between growth of FDI in automotive industry in Macedonian economy and its influence on the host suppliers. The case for automotive industry is motivated by the three reasons: the global motor vehicle production notice permanent growth of 8.22% average in the last 5 years; inflow of FDI in automotive industry in Macedonian economy has increased sharply in a period 2010-2014, reaching annual average rate of 45%; the experience of the positive influence of FDI on domestic suppliers in automotive industry in the new EU members from CEE where the FDI in automotive industry has contributed the process of reorganization and modernization of the whole automotive industry.

The main research issue is concerning whether the Macedonian businesses have succeeded in establishing and servicing supply linkages with FDI. The linkages are connections between multinational firms and their local suppliers that can result in: increasing demand for intermediate products which allows local suppliers to reap the benefits of scale economies, higher requirements for product quality and on-time delivery as a challenge for host suppliers to upgrade the production management and technology and direct knowledge transfer from foreign customers to local suppliers (Javorcik, 2004).

The challenge for analyzing the influence of FDI in the automotive industry to the host suppliers also arise from the incentive nature of this kind of FDI. There are strong evidence that between the economies especially among the developing economies exist 'incentive-based competition' for FDI. Incentive policies of host governments are positively related with FDI attraction (Zhang, 2002). Shaukat and Wei (2005) found that investment incentive policies encourage FDI, especially in automobile, telecommunications and electronics industries. As an effort to catch up with the neighbors and former transition economies from Central Europe, Macedonian government has employed number of investment incentive schemes to attract FDI. So it is expected the cooperation between the FDI and domestic suppliers to have a positive feedback and justification of the provided incentives.

The paper is directed to make visible the process of relationship between the FDI and host suppliers by investigating the correlation between the inflow of FDI in automotive industry and the output of local manufacturers of intermediate components. It actually describes whether the local suppliers have succeeded to engage within the supply chain of FDI. The extent of involvement of host suppliers into the value chain is seen as a way to become competitive not only in the local but also in the wider market.

The analysis starts by looking at the literature on the nature and determinants of linkages between the FDI and host suppliers. Second, it presents the data and the model used in the analysis. Then it proceeds with the calculation of the relationship between the FDI and engagement of the host suppliers in the supply chain according to the data from input-output tables. Finally, it is derived the conclusions based on the regression analysis.

1 Literature review

There is a bulk of existing literature that from different aspects analyze and assess the impact of the FDI inflow to the host firms. The establishment of linkages is one of the main issue that explain and determine the reaction of host firms to the presence of FDI. Actually, the existence, nature and the extent of linkages clarify whether the host suppliers exploit passive or active role in establishing, realizing and maintaining business linkages with the FDI. Business linkages between foreign direct investments and local small and medium enterprises refer to the direct and indirect interactions.

The nature, reasons and contribution of linkages between the FDI and host enterprises, has been widely discussed. According to Blomström & Kokko (1998, p. 2) „foreign investment can result in benefits for host countries, local firms may be able to improve their productivity as a result of forward or backward linkages with MNC affiliates.” Business linkages are stressed as „one of the best ways for SMEs to enhance their competitiveness” UNCTAD (2010, p. 23).

Some of the literature highlight the catalyst effect of FDI on the local industry, especially the backward vertical spillovers, whereby FDI increase the productivity of local suppliers linked to them in the production chain. Spillover is more likely to be vertical than horizontal in nature (Javorcik, 2004). Backward vertical spillovers should have the highest catalyst impact that is widely analyzed and modeled. Markusen and Venables (1999) offer a model in which FDI generate linkage effect back to intermediate-goods producers, leading to the extension of the intermediate goods sector in the host country. Rodrigues-Clare's model (1996) suggests on the linkage effect of multinationals on the host country, especially if FDI activities use intermediate goods more intensively they will generate stronger linkages with host companies of specialized intermediate inputs. Analyzing the linkages in Eastern European economies (Jindra et al, 2009) develops an excellent test-case of the role of FDI in development of local firms in the process of adaptation and integration in the highly competitive and global economy. The catalyst effect is strongly emphasized in automotive industry due to the fact that a motor vehicle is a sophisticated product that is made up of thousands of parts and components, the weight and size of components and materials oblige the carmakers to source, at least partially, at the local level (Rugraf, 2010).

Some inputs as a result of their complexity or simplicity, transportation or production costs tend to foster local proximity to the FDI customer. So it gives the opportunity to local companies of becoming component suppliers of FDI. In the automotive industry the quality of the final product does not only depend on the quality of the different parts and components but also on the capacity to manage the coordination of the production process with that of their suppliers. Automotive manufacturers are therefore stimulated to exchange information, management practices and know-how with their suppliers. They may even provide their suppliers with assistance programs aiming to increase the quality of the coordination and the quality of production. The rate of responsiveness of the host companies to the FDI needs, and acquiring new knowledge depends on the capabilities referring to the human, technological and financial resources. According to (Spencer, 2008; Blomstrom and Kokko, 2003), the capability of potential supplier is closely link with their human capital that may enable innovation and increase benefits. In developing countries firms who do not have absorptive capacity, couldn't benefit positive spillover (Haskel et al, 2007). It means that technological, human and financial inability of host suppliers can limit or decrease the effect of governmental policy of subsidizing the inflow of FDI.

Automotive industry is characterized as a highly hierarchical structure where the manufacturing of product depends on a multitier chain of values. The higher in the tier is, the complexity of the processes and added value is increasing. The first tier suppliers are delegated more complex responsibilities on research, design, manufacturing and assembly (Lung, 2004). The next tier referring to the simple automotive components suppliers based in developing countries (Barnes and Kaplinsky, 2000) and in transition countries (Pavlinek, 2003).

It is not just important to attract higher inflow of FDI but also how many benefit the local suppliers will succeed to capture. The responsiveness of host suppliers to the possible positive externalities of FDI backward linkages has been associated with the 'absorptive capacity (Crespo and Fontoura, 2007). When the local firms do not possess absorptive capacity, FDI impact on the host economy will be limited (Jindra, et al. 2008). The more the supplier is technology, innovation and qualified labor-oriented, the better it is prepared to benefit the inflow of FDI and confront competitive pressure of potential and actual suppliers accompany the FDI. Establishing an innovative-oriented system between the FDI and host suppliers may more easily resist to competition threats and can strength the relationship between the FDI and local suppliers. Furthermore it will be a good way to replace the expensive FDI policy of local governments after a certain period of implementation. Along the time, the advantages of location that arise from a supportive FDI policy have to be replaced by the innovation created advantages by host suppliers. Although the previously researches show that FDI in the former transition economies of CEE are market and efficiency based motives, the search for knowledge and technology has essentially gained importance over time (Gauselmann, Knell, and Stephan, 2011). Foreign knowledge locations become more and more important to FDI as sources of knowledge and technology (Meyer, Mudambi, and Narula, 2011). Simultaneously, it increases productivity and industrial upgrading in the location, where foreign subsidiaries can be considered as agents of technological and economic development (Günther and Gebhardt, 2005). Perugini, Pompei, and Signorelli (2008) provide empirical evidence for the fact that through the linkages FDI contributes to generating a knowledge base for a sustainable growth path of transition economies.

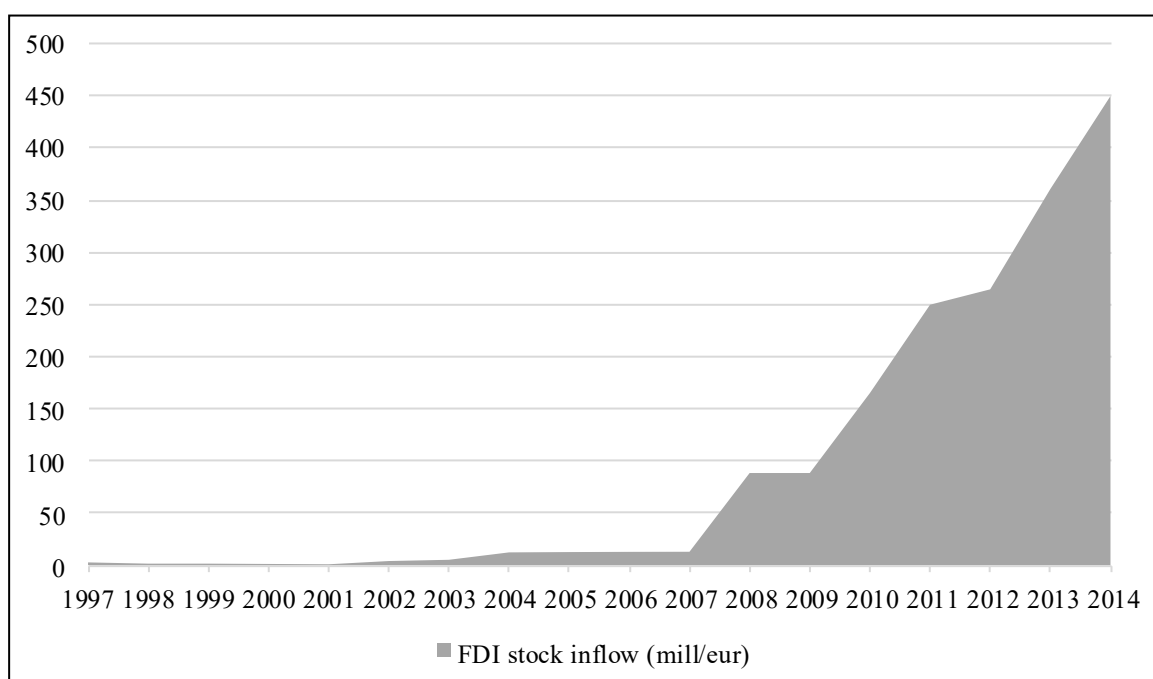
Particular emphasis on FDI is placed on the contribution of FDI to increasing productivity and competitiveness of the host industry. The FDI inflows may raise the productivity of the host companies forcing them to exit or by increasing their share on the market of intermediaries. It is often hoped that technology transfer resulting from FDI will go beyond actual projects undertaken by foreign investors and, through knowledge spillovers, will benefit host firms (Javorcik, 2004). The capability of potential recipient firms is a

function of their human capital, their organizational structures that may facilitate innovation and thus enhance the benefits from received knowledge (Blomström and Kokko, 2003).

Through the majority of literature and theoretical researches it is considered that FDI creates a good base for establishing long-term relationships with the host companies if the local companies invest in enhancing their labor, technological, knowledge and managerial competences that will result in improvement of their competitiveness.

2 Properties of FDI inflow in automotive industry in Republic of Macedonia

Although the Macedonian economy has had a manufacturing experience in automotive intermediate components, many studies have found a number of weaknesses in this sector referring to limited technological and design expertise and experience, poor experience in highly engineered precision and major automotive components (The World Bank/MIGA, 2006). Several Macedonian companies were engaged in the supplying chain of some automotive manufacturer but it was limited within the former Yugoslavia frame and the Russian market. During the privatization process some of these companies have been bought by foreign investors and continue to produce a range of components for cars, buses and trucks. Remarkable growth of FDI in the automotive sector is noticed beyond 2007 as it is shown in Figure 1.



Source: National Bank of the Republic of Macedonia, 2015

Figure 1: FDI stock inflow in automotive sector in Macedonian economy in the period 1997-2013

The FDI inflow in the automotive industry in the Macedonian economy is represented with huge global supplying companies like Johnson Controls, Johnson Matthey, TeknoHose, Kemet, VanHool, ODV Electric, Markart, Draexlmaier, Kromberg and Schubert. Only VanHool represents the final product manufacturer, the rest of the FDI companies constitute Tier 1 or Tier 2 suppliers in the automotive industry. As a result of that, the local suppliers tend to be in Tier 2 and Tier 3. According to the available data, it is shown that the output of the local manufacturers as intermediate suppliers from the textile, metal, plastic and rubber industry has increased by 250% from 2007 to 2013.

The experience of the former transition CEE economies has proved that FDI significantly affects economic growth in a positive way and leads to a positive effect on domestic investments (Alguacil et al., 2008). According to (Shenkar and Luo, 2008) the spillover from FDI is substantial, i.e. in typical developed economies, FDI realizes between 10 and 20% of their input locally with the tendency of local procurement increasing over time. The impact of the linkages to the growth is in relation to the degree of finalization of production processes of FDI and the complexity of the intermediates engaged in the production. More of the Macedonian intermediate suppliers are low-tier suppliers from tier 2 and tier 3. The positive impact to the lower tiers arises from the less customer specificity and thus allows to supply multiple customers with similar products (Pavlinek and Zenka, 2011).

On the other hand, the higher level of finalization and complex products would have more technology influence to the domestic suppliers. As an evidence for this hypothesis is the case of backward linkages between the producer of buses “VanHool” and the local company “Activa” that has made a greenfield investment of 4.5 million euros in production of highly finalized products intended to the manufacturing of buses. The establishment of this linkage has resulted in arising of “Activa” as a Tier 1 intermediate supplier and has opened potentials to be a follower of VanHool in its international investment activities. Higher requirements for product quality and on time delivery introduced and requested by the FDI enable two more Macedonian domestic suppliers to become global suppliers of intermediaries to the “Johnson Matthey”. Such experience of these host companies is positive example how the local firms when fulfill the production, technical and quality standards can engage in the global supplying chain of foreign investors.

3 Data and methodology

The paper examines whether the involvement of domestic suppliers is correlated with FDI presence in the automotive industry. Through the literature there is statistically significant evidence of increased FDI level and correlation with higher local supplier productivity and engagement in FDIs (Javorcik, 2004; Blalock and Gertler, 2008; Liu and Yeung, 2008).

In this paper, estimation and analysis is carried out on the base of data obtained from the State Statistical Office and National Bank of the Republic of Macedonia. Two sets of data are employed in the analysis.

The first set relates to data concerning the impact of FDI inflow in automotive industry on domestic firms as suppliers of intermediates. It refers to the use of the intermediates based on information on sourcing patterns from the input-output (IO) matrix and the value of production in automotive sector according to NACE2. The intermediates in our study concern: the textile, rubber and plastic products and fabricated metal products. (Table 1).

Table 1: Input-output matrix between intermediate and final user in automotive industry (in million MKD)

Intermediate	Manufacturing of motor vehicles and other transport equipment							
	2005	2006	2007	2008	2009	2010	2011	2012
Textile	0	0	0	0	0	12	5	14
Ruber and plastic products	1	2	1	1	0	0	23	23
Fabricated metal products	0	0	0	1	24	126	136	228
Total	1	2	1	2	24	138	164	265

Source: State Statistical Office of the Republic of Macedonia, 2015a, 2015b

The establishing of linkages and spillovers take time. So, the lags are appropriate between the time of entering of FDI and the time of establishing the linkages. The output of domestic suppliers would not be affected by the foreign investment since it is assumed that investment takes time to materialize (Haskel et. al, 2007). The evidence confirms that foreign investors take time to learn how to take advantage of potential suppliers and that local businesses must pass certain basic thresholds to qualify (Moran 2005).

To consider the influence of the time lag between the inflow of FDI and the start of manufacturing process as a data for FDI is taken the stock of FDI inflow in automotive industry for the period 2005-2012. (Table 2)

Table 2: Stock of FDI inflow in automotive industry (in mill/euro)

2005	2006	2007	2008	2009	2010	2011	2012
12.6	12.8	12.9	88.41	88.41	165.10	249.79	264.54

Source: National Bank of the Republic of Macedonia

The second set of data included in the model concerning the factors that are identified as constraints within the Survey of business tendencies in manufacturing sectors in Macedonian economy according to the Official Statistics. It includes equipment readiness and availability of skilled and educated labor force. In particular these factors represent the competences and the ability of domestic suppliers to benefit from the FDI presence in the

economy. The main purpose of this approach is to exploit some business tendencies on a general level and whether they contribute in establishing the linkages with FDIs.

The correlation and extent of involvement of domestic suppliers in FDIs manufacturing activities is measured by developing a linear model. (Wooldridge, 2010)

$$Yds = \beta_0 + \beta_1 FDI_{automotive} + \beta_2 ER + \beta_3 L + u \quad (1)$$

The dependent variable Yds (output of domestic suppliers,) measures whether foreign investors cooperate and use domestic companies as suppliers in their value chain. Dependent variable is also put in relation with the business tendencies in the equipment readiness (ER) and endowment of high skilled labor (L) as determinants of the ability of local companies to engage as suppliers. The error term u is consisted of a variety of issues including omitted variables and measurement error and if it has mean zero, $u = 0$, it is obtained the function:

$$F(\text{domestic suppliers} | FDI \text{ in sector, equipment, labor}) = \beta_0 + \beta_1 FDI_{automotive} + \beta_2 ER + \beta_3 L \quad (2)$$

This approach enables to use the input-output tables to identify backward spillover in automotive sector initiated by the increased FDI inflow in automotive industry in Macedonian economy. At the same time it identifies the extent of involvement of domestic suppliers in the value chain of foreign investors. Finally, using the OLS estimation it is examined the influence of the equipment readiness and availability of skilled labor to the manufacturing output of the intermediate suppliers. The characteristics of the local firms can play an important role in determining the extent of positive externalities from FDI (Tang and Altshuler, 2015)

Using the input-output tables and regression analysis we can also identify the engagement of the three main groups of intermediary products in the supplying chain of automotive industry in Macedonian economy. According to the data from the input-output matrix it refers to: fabricated metal products, rubber and plastic products and textiles. Using the linear model and FDI inflow in automotive sector as an explanatory variable we can estimate conditionality between FDI inflow and output of the separate intermediate suppliers.

$$F(y|x) = \beta_0 + \beta_1 x \quad (3)$$

The dependent variable (y) measures whether the FDI inflow (x) in automotive industry has a positive influence to the output of analyzed intermediate products.

4 Estimation and results

The lower table 3 reports OLS estimates of equation 2 using values for FDI in automotive sector, ER and L. The coefficient of correlation for FDI in automotive sector is substantially positive suggesting positive backward linkages between FDI and domestic suppliers. The coefficient of FDI implies that 90% of the raise of the output of domestic suppliers is explained with the increased inflow of FDI in automotive sector.

Table 3: Regression analysis for intermediate suppliers in automotive industry in Macedonian economy

	FDI _{automotive}	ER	L
Multiple R	0.953568	0.492632	0.878699
R Square	0.909292	0.242686	0.772112
Adjusted R Square	0.894174	0.116468	0.73413
Standard error	33.03816	95.46199	52.36649
Observations	8	8	8
P-value	0.000242	0.0214878	0.004066

Source: Own calculation

The column 3 and column 4 identify the influence of some endogenous characteristics of the local firms that could play an important role in determining the extent of involvement of host suppliers in the value chain of foreign manufacturers. Column 3 reveals insignificant correlation between the equipment readiness and output of

the host suppliers suggesting the insufficient investment in technology as a weakness in the competitiveness of Macedonian companies. It can be also associated with a lower technology spillover between the foreign investors and host suppliers that can suggest to lower added value in involvement of host suppliers. Increasing the equipment readiness could mean increasing the absorptive capacities of host suppliers contributing to boost their engagement in the supplying chain of foreign manufacturers. Contrary to column 3, column 4 suggests on a positive and significant reliance between the availability of skilled labor and output of the host suppliers.

The results of the correlation between the inflow of FDI in automotive sector and the separate intermediary industry engaged as a supplier in the manufacturing process of FDI are expressed in table 4. Using the OLS technique in equation 3 it is estimated the correlation between the main explanatory variable, FDI inflow and output, separately for all three kinds of products. According to the results it is obvious substantial positive correlation that suggests on boosting the output in analyzed products due to the higher inflow of FDI in automotive sector. Thus, the extent of backward linkages measured as the amounts of inputs sourced from the domestic suppliers is substantial.

Table 4: Regression analysis between the FDI inflow and output of the separate intermediaries

	Metal products	Rubber and plastic	Textiles
Multiple R	0.949403	0.869008616	0.793383061
R Square	0.901366	0.755175974	0.629456681
Adjusted R Square	0.884927	0.71437197	0.567699461
Standard error	29.73359	5.49453025	3.888804343
Observations	8	8	8
P-value	0.000312	0.005082	0.018776

Source: Own calculation

6 Discussion and conclusion

The results of the analysis in this paper could be drawn in three points.

First, increased output of the intermediate suppliers as a result of the higher inflow of FDI in automotive industry. The main aim of the paper was to verify the positive correlation between the inflow of FDI in automotive sector and the engagement of host companies as suppliers in the value chain of foreign investors. The analysis shows that the FDI inflow in automotive sector plays a remarkable role in increasing the output of the domestic suppliers. The results show the dominant role of the FDI inflow in boosting the production of intermediary suppliers. It proves that the FDI inflow is positively associated with establishing linkages to domestic suppliers. The outcomes are in line with many researches referring to development of former transition economies from CEE which emphasize the importance of the FDI for the creation of linkages with the local suppliers (Günther, Jindra and Stephan, 2009). The analysis indicate on boosting the production in sectors that are previously were not engaged in automotive industry like a textile sector.

Second, time lag exists between the start of the FDI and the time of engagement of domestic companies in supplying the intermediate contents. The foreign investors at their entrance in the first years may be more inclined to import intermediate inputs due to their familiarity and linkages with foreign suppliers on which indicate the time lag between the time of investment and engagement of domestic suppliers in the manufacturing process. Particularly, it is distinctive feature for the sectors that previously had not been involved as suppliers in automotive production.

Third, due to the dominance of FDI inflow in tier 1 of the supplying chain in the automotive industry, most of the Macedonian intermediate suppliers belong to tier 2 and tier 3 as suppliers of less sophisticated and lower value-added component. The presence of foreign companies and their decision whether to establish linkages with host companies, increase the pressure on domestic suppliers to become more efficient. It also forces specific requirements in terms of the quality and fulfill the standards of supplied intermediates that contribute to increase the competitiveness of domestic suppliers and as a way of upgrading the capabilities of local SMEs. Drawing on Porter (2000) it is recognized that demanding customers and competitive supply environments can provide firms with important signals to improve their own offerings. Also it is evidentially, if the FDI inflow is located in production with the highest level of finalization the domestic suppliers have incentives to invest in more sophisticated production. As a result of that, the intention should be put on the attraction of FDI in the highest stage of finalization.

Although this analysis does not assess the effect of FDI in automotive on employment, technology spillover and increased export, the results suggest on an increased output of the domestic intermediary suppliers and the usage of local content in production. Linkages between foreign and domestic firms are an important precondition for spillover to occur (Pavlinek and Zizalova, 2014)

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Abstract

Purpose of the article The analysis of the economic output leads to the conclusion that the researchers of the economic order has been addressing the issue, in relation to the economy, only globally. The article is one of the first attempts to colligate the theory of order with one of the economy's sectors – services. Thus the aim of the work constitutes a cause for discussion about a place and a role of services in the economic order as well as the feedback they provide each other.

Methodology/methods Assuming that services may represent peculiar combination of administered order and spontaneous order, the concept of ordoliberalism and the concept of social market economy have been used for the analysis and the synthetic approach.

Scientific aim The quest within the confines of this research field requires answering the questions from the area between services and economic order: How do services support and realize the ordo rule? May one relate the ordo rule to services in the first place?

Findings Such background entails two theses: The development of services favors economic order. These services may include legal services or advisory services. However, the development of creative services, e.g. advertising or services connected with financial engineering, upsets or may upset the economic order.

Conclusions Depending on the type of order, directed (administered) or spontaneous (market) one, services are more or less coupled with the order. Public services are governed by a state, and market services are shaped by the market.

Keywords: service sector, service development, economic order, theory, ordo perspective

JEL Classification: B04, D05

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Introduction

The transition from the economy based on an agrarian sector to the economy based on an industrial sector was accompanied by the industrial revolution and enormous social changes (industrialization, and, according to Karl Marx, creation of the working class). Initially, the process was developing in the environment of a free market that was based, according to K. Polanyi (Polanyi, 1944), upon three rules: free labor market, gold currency and free international trade. The people living at that time had no awareness of those ongoing transformations. The system (order) of unfettered economy of the Laissez-faire period collapsed. On its debris greater presence of the state in the economy and society appeared. It happened even to the extent of fascism or collectivism in the soviet style.

If the thesis is that people generally believe in the rule of the three sectors (which is to be verified statistically³⁷), then the modern economy of the developed countries should already be functioning in the postindustrial phase. Such economy has definitely different features than industrial economy. The question is whether those tendencies are sufficiently followed by the institutional sphere, especially formal institutions generated by a state and its authorities. Therefore there is necessity to raise a subject of the feedback that exists at the borderline between the economic order and services. The aim of the work is to inspire discussion on services in the environment featuring economic order and the influence of the order on services.

The process of saturating economies with services on the global scale makes the present phase of the economic development a new era – the era of services. Again, according to the three sector theory, it must be stressed that along with entering higher stages of economic advancement the active participation of services is becoming greater and the role of the other sectors is relatively diminishing, especially the raw material sector. Contemporary service functions are very broad and integrated with all human activity from farming to industrial business. This is a proof that humans mature economically and change the ways they see economics and economic order. It simply has to evolve and be reformed. Natural order that has shaped people has given the way to the new order which is treated by ordoliberalists as *ordo*. This new arrangement regulates the style of human activity and creates new economic relations and service provision which ultimately satisfies the needs of all the participants of economic processes.

1 Theoretical grounds

Economic order is to be understood as general performance conditions, or relatively, rules of the game which are obligatory for economic entities and their activity on the market (Pysz, 2008). Human civilizations are structurally formed by economic and social order. It is not only a product of human thought, but first of all, it comes from a historic process of learning and development of many successive generations of people (Hayek, 1983).

As a result of rebuilding the administered economy into the market economy, in many developing countries, enterprises have gained freedom to make independent decisions that concern changes in functioning and ways of running business in particular surroundings. It seems that a group of small and medium enterprises took the most of the advantage of the new conditions. The group mostly includes service organizations. Liberalization of trade in the age of advancing globalization processes causes the necessity to rapidly improve their economic condition as well as their competitiveness (Skapska, Samul, 2015).

The task of social market economy has been creation of conditions in which everyone is potentially in their readiness for using the available technology and unlimited freedom so that they are beneficial to others. According to Erhard, freedom and responsibility were synonymous and they provided constant order. Freedom lacking responsibility leads to social breakdown.

Economic phenomenon researchers currently face challenge to further seek for proportion regularities between the directed (administered) order and the spontaneous (market) order. They should take into account various rules as there are different optimal (rational) rules for one economy and different ones for the other. In this kind of research, it seems services have considerable role as they are based on human competence, and particularly on creating beneficial multilateral relations. Simultaneously services are one of the factors affected by the economic order and they influence the shape of this order too, especially in the long term. As the economic order influences services, one should take into account two different approaches while analyzing the issue: the role of public services, governed by a state, and the role of commercial services shaped by the market.

³⁷ For instance, one may compare it with employment and/or value of output in general.

Service is produced only due to willingness and proper attitudes of both parties. One party entrusts the other with their problem and needs. The other party declares readiness to tackle the challenge. Thus, there is this intentional context that produces a service relation in which the labor of the service provider is a causative factor transforming certain potential into real and unambiguous benefit (Rogoziński, 2003).

In primary source books there are often interchangeable notions “service sphere” and “a service sector”. Services may be defined as any human work done in favor of the other person in order to satisfy their needs, obtain bilateral benefits, not necessarily direct ones, and often by means of modern technology. Service sphere is a broader notion than a service sector because it concerns services that “serve” other sectors of national economy. Within a service sector and its constituents, spotty service activities are performed and they are of different dynamics. Thus, it is one of the reasons that lead to alterations in accepted classifications. Sometimes the old classifications are even replaced. Apart from theoretical divisions of services there is also a system classification whose basic criterion of systematics is the division of economy into two spheres: tangible output and outer tangible output. Consequently services may be divided into so-called tangible services (production) and intangible services (the service is a product for sale, but its dominant elements are intangible: it cannot be touched, felt, tasted as opposed to material goods). Services as a field of relations between a service provider and a service receiver are subject to administrative and market regulations which, in terms of economy, translates into restriction of service freedom and its release.

Tangible services are consciously provided for the production purposes and mainly for individual consumption. Intangible services, however, are consumed collectively by general society. The first category of services include trade, maintenance, hotels, restaurants, transportation, communication, construction works. The intangible category includes the fields like education, healthcare, social care, financial agency.

New creative contribution to the theory of economy was introduced by ordoliberalism. Its representatives, such as Eucken, Hayek, Röpke, overcame dualism that had existed between the neoclassical theory and the historical school of economic thought in Germany. Ordoliberals managed to achieve the compromise due to which the creation of the economic order concept was possible. They viewed economy as not a pure theory of rational choices, but as an element of a real world. The culmination of their research was a concept of social market economy. This in turn enabled them to weld free entrepreneurship with social securities (Przybyciński, 2009). The model of social market economy is a model of balance and its core is harmonious economic and social interests. However, it requires certain adjustability to match modern conditions of the global economy. Ordoliberalism emanates from the pre-II-World-War times. At that time the globalization was not that advanced compared to the present time (Mączyńska, 2013).

2 Discussion

If one wants to answer the question whether services support the realization of the *ordo* principles, it is not possible to word a clear-cut thesis. Services are so diversified that the number of factors affecting the course of a business activity in the conditions of free competition and freedom of an individual constitutes risk and uncertainty. The process of service provision is considerably less repeatable in relation to the production of tangible goods. The main factor influencing the shaping of order and the course of service provision is a human along with their emotions, skills, personality, professional experience and the ability to introduce innovation in product-process sense. One ought to remember that services are relations.

As Eucken points out, the science of economy should examine theoretical and historical aspect of economic phenomena and economic processes with respect to their mutual interdependence (Eucken, 2005). Order of the social market economy covers the economy based on competition, a transitional phase of the global economic control and the market economy that is income division oriented. System transformations and changes in service activity, along with technological progress, attest economic openness and evolutionary changeability of features which make equally the definition of the economic order and services dynamic. Presently, the increase of services' importance in economy is an economic regularity. The contact point of the economic order and services might be a particular phase of the development along with the attached values and goals.

The grounds for the realization of the economic order are saved in national agreements, pacts, treaties or constitutions. International economic integration has enormous influence upon the evolution of the economic order. In order to create institutional basis of integration, countries should act in accordance with rules that connect services as well as the economic order as they provide guidelines for setting up and running business activities. The rules include: an economic freedom rule; legitimacy rule; obligation to possess qualifications; a fair competition rule; a rule of respecting good practices; a rule of respecting right interests of consumers. There are no scientific proofs for the belief that markets are effective. Such a conviction makes it more imperative to revise some old theories, doctrines, criteria and rules which are becoming no longer valid and defeat in new, dynamically changing reality (Mączyńska, 2013).

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Each economy is based on specific framework the functioning of which constitutes an inter-entity system of relations. This system is broadly understood as services and they concern the countries, enterprises and households with a relatively high level of social-economic diversity (Skąpska, 2016a; 2016b). Services reach economic dimension if they satisfy needs by means of consumption, both, in the public and the market sector (Skąpska, 2014; Wünsche, 2014).

If one sees from the angle of individual and collective responsibility, services and their influence on the economic order must be assessed from at least two points of view. The approaches must include services that are under regulations and those that are not. It is because the assumption is that the economic order has more influence on one type of services and lesser on the other. The services that are not regulated in the European Union can be found in the activities of non-economic nature and they are provided for the sake of the public, for instance: financial services connected with the networks of electronic communication (and accompanying devices and services); transportation services; health oriented services; audiovisual services; gambling; activities connected with execution of public authority; social and personal security services; activities provided by notaries and court enforcement officers, that is ones pursuant to official authority acts. The services that are regulated by provisions included in the service directive concern the services which are received by consumers and enterprises, for instance: services provided by sports facilities; theme parks; tourist and recreational resorts; services by architectural and construction companies; car rentals; travel offices; advertising agencies; management services.

The conception of the economic order began in the interwar times whose basis was ordoliberalism. The concept of *ordo* (order) became a source of practical realization of another concept, namely, Social Market Economy and made a cause for thinking about key values (Table 1) which in an evolutionary way created the current system of human activity. Ordoliberalism is connected with the following notions: social justice; property; ordered liberty according to the rule of social justice and property; organized capitalism under the constitutional rules and provisions of market competition; stable price policy. Ordoliberals declaimed for a strong state, but the one that is entrusted with a task of creating conditions for proper functioning of the economic order. They sought such order that would secure the freedom the best, mainly economic one.

Ordoliberal values such as freedom and capital value were highlighted in services along with the opening of the market economy. Simultaneously, services gained more importance by acquiring economically useful features. Most of all, they became the subject of exchange on the emerging market that was no longer being centrally managed. Ownership transformations were assisted by different methods of privatization. The general rule was selling big enterprises of high market value to foreign investors by use of the capital method. Small and medium companies of local importance were submitted for closing-down privatization, both in a legal and economic sense.

Polemical considerations in the subject of services and order resurface additional questions: How far do regulations influence services? Are they controllable? If so, what is the range? Is the division into public and market services (where the state is a regulator and market is an operator) the only determinant of the controllability?

Table 1 Ordoliberal values

Values	Ordoliberals	Rules
capital value	L. Miksch	market competition regulations
	F. Böhm	strong state under the rule of law (non-egalitarian)
	W. Eucken	flexible price system, stable value of money, open markets, private property, freedom to enter contracts, responsibility, stability of economic policy
freedom	L. Erhard	social justice property

Source: Own elaboration.

One may underline at least two main groups of constituents of the economic order (Table 2).

Table 2 Constituents of market economic order

Market values	Significance
individual liberty	According to F.A. Hayek the most important rule of any social and political activity in a free society is a free person. It must be stressed it is not possible to create sensible economy that disregards unpredictability of human reactions due to signals, information, instructions or stimulus.
free competition	A. Müller-Armack claimed that competition makes enterprises satisfy needs of consumers in accordance with their expectations.

Source: Own elaboration.

Contemporary economic reality enforces new economic order whose goal, instead of competition, is having relations based on cooperation and mutual benefits as well as freedom and ethic values. Key entities and decision makers that build up economic relations are: an individual, market, society and a state.

Ordoliberals were dividing state, social and economic orders off, but they noticed their mutual pull. They also distinguished the order of real existential situation of a human from certain elusive state, absolute which should be pursued by everyone on their earthly way of existence – so-called ordo (Table 3).

Table 3 Essence of economic order according to ordoliberals

Thinker	Essence of order	Idea
Röpke Eucken	ordo	It is necessary, rational and perfect order created by animal rationale in order to organize natural order and economic freedom.
Hayek	order of activity	Abstractive order in which there are spontaneous rules of the game that serve, for managing human individuals, to create possibly the best general performance conditions for the realization of various individual aims.

Source: Own elaboration.

As it was noticed by A. Müller-Armack (1990), competition makes enterprises to satisfy the needs of consumers according to their expectations. Truly, the mission of services, by means of best provision and by a service provider, is to feed the needs of the market.

The subject of consumption seems to be critical for the evaluation of the economic order quality according to Zeman-Miszewska and Miszewski. After satisfying basic needs of developing individuals, as well as societies that are constituted by them, intangible needs become a key necessity and it cannot be fulfilled by goods offered in the core sales offer of big retailers. The issue of the influence upon developing human individuals greatly involves the participation of services, especially the ones connected with the field of mass culture. Those services, and goods that are associated with them, are predominantly designed in a way that arouses the desire to possess or constantly participate in the offered theater. It also does not allow much room for reflection or development of esthetic sensitivity (Zeman-Miszewska, et al., 2015).

Still, there is an open question about the proportions – how much services and how much ordo one needs. It seems one may postulate to execute human rights according to the principles of “ordo” and force a decision maker to be responsible for their calls and economic choices since the goal of ordoliberals has been the search for such order that would secure freedom, mainly economic one, and at the same time extend the access to a broad range of services that satisfy the needs of economy and a society.

Conclusions

The analysis results in the conviction that economic order has only an organizing role. The most important value in regulated services, that is the ones that represent directed order, is stable development. However, in non-regulated services, the strategy of running business is based on the increase of competitive potential. The development of services contributes to economic order. These services may include legal services or advisory services. Again, the development of creative services, e.g. advertising or services connected with financial engineering, upsets or may upset the economic order. Depending on the type of order, directed (administered) or

spontaneous (market) one, services are more or less coupled with the order. Public services are governed by a state and market services are shaped by the market.

One must agree with Hayek and say the order, in which spontaneous rules of the game apply, shapes the form of the best general performance conditions for those managing individuals who wish to realize their individual ambitions. Due to this concept, the conditions for new services arise. They are structured by the market where the best services are needed to satisfy the expectations of its consumers. According to the ordoliberal approach the market order and the administered order are interdependent. One issue remains and it is the proportion, the one economics has been struggling with since the very beginning. The essence of the ordo is the order of rational nature that is based on goals and values that are equally right to an individual as well as to society.

In accordance with the "ordo" idea and in a normative sense, the desired course of action is shaping the economic order in a way that corresponds to human nature. Without this order the provision of services is disrupted or even undoable.

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*THE RESILIENT ENERGY UNION – RESPONSE TO THE CHALLENGES OF
XXI CENTURY*

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Abstract

Purpose of the article Energy is one of the fundamental sectors of economy having significant impact on development of a country. Within the last decades a range of new challenges appeared in Europe, such as security of supply of energy sources, climate change, lack of competition between energy companies, affordable energy prices, and other. The existing legal framework of the European Union (EU) does not already perfectly fit to the requirements of the current situation, and there is a clear need for retailing the energy policy. The new era in the EU energy policy was launched by the Riga process at the beginning of 2015 and found its first highlights in the communication of the European Commission devoted to the Energy Union. The resilient Energy Union aims to ensure EU consumers secure, sustainable, competitive and affordable energy, defining the five main action directions (dimensions). The purpose of the paper is to analyze the possible impact of the new Energy Union strategy on the existing energy sector.

Methodology/methods The generally accepted quantitative and qualitative methods of economic science, inter alia comparative analysis, parameter estimation, grouping, economically mathematical modelling, synthesis, inductive, deductive, logically constructive and expert evaluation methods have been used for the research.

Scientific aim is to provide an outlook on existing EU energy system, describe the approach proposed by the Energy Union and with a help of the GAMES model demonstrate how the five dimensions adjust the current situation to the new priorities.

Findings The main findings of the research show that the Energy Union is a strong tool with a high potential to change the situation in the energy sector of the entire European Union and each its member state. The 5th freedom of the EU – free movement of energy, becomes a reality after building up physical infrastructure (hardware) connecting energy islands with capable “bridges” and adjusting legislation (software) in order to eliminate unjustified roadblocks and develop a proper market design.

Conclusion The results of the data analysis and the GAMES model demonstrated that the proposed by the Energy Union strategy solutions have a high potential for changing the directions of energy flow within the EU and outside its borders by stimulating the local generation, building new infrastructure and strengthening existing one, as well as integrating isolated markets into the common energy network. The concept of the Energy Union is still young and should be further developed by the EU member states.

Keywords: Energy, Energy Union, climate change, sustainability, competition, market design, infrastructure

JEL Classification: F5, O1, O2

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Introduction

Energy is one of the fundamental sectors of economy having significant impact on development of a country. Due to the strong correlation of the well-functioning of energy sector and economic wellbeing of a country or a region, clever governance of energy-related processes is of utmost importance. Within the last decades a range of new challenges appeared in Europe, such as security of supply of energy sources, climate change, lack of competition between energy companies, affordable energy prices, and other. The existing legal framework of the European Union (EU) does not already perfectly fit to the requirements of the current situation, and there is a clear need for retailing the existing energy policy. After discussions between the European Commission, the EU member states, politicians, non-governmental organizations, academia representatives and other parties, a new era in the EU energy policy started (European Commission, 2010). The new EU Energy Union was launched during the Latvian presidency in the EU Council by the *Riga process* at the beginning of 2015 and found its first highlights in the communication of the European Commission devoted to Energy Union. The resilient Energy Union aims to give EU consumers secure, sustainable, competitive and affordable energy, defining the five main action directions (dimensions). The aim of the paper is to present the results of analysis of the possible impact of the new Energy Union strategy on the existing energy sector in the European Union. The novelty of the paper comprises an analytical outlook on existing EU energy system and the approach proposed by the Energy Union, as well as application of the developed by the authors *GAMES* model demonstrating how the five dimensions adjust the current situation to the new priorities.

1 Economic development cornerstones

The development preconditions of economy have been attracting attention of scientists for ages. The beginning of economic development theory could be found in 18th and 19th century, when scientists tried to define the main preconditions of economic development. For example, the economists-classicists A. Smith and D. Ricardo making their research in time of industrial revolution particularly highlighted importance of technology in production, as well as international trade and labour productivity. At the same time R. Maltus considered that the increase in population causes scarcity, however, he didn't take into account technological development and the principle of economies of scale.

The model of Development stages proposed by the scientist W. Rostov and later the model of R. Solow continued the idea of classical economists additionally emphasizing that there is a strong correlation between savings and investments on a one hand and the development rate of economy on another. The theory of structural changes and its promoters W. A. Levens and H. Chenery saw development as a move from agricultural to industrial manufacturing and consumption trend from food to industrial products and services. The Development theory and its representatives F. Perroux and K. Rothschild believed that to initiate a development of a particular region a change in the balance of the world forces with a help of economic, political or institutional instruments is needed. Neoclassical theory and its representatives J. Hick, G. Stigler as well as other economists of the corresponding period considered the state non-involvement into the market processes and competition to be the best preconditions for economic development. One of the latest theories - Endogenous theory, and the scientist M. Todaro believed that economic development comes from increase of income keeping the production at the same level. The theory promotes active state policy, stressing that state plays crucial role in investment attraction, especially foreign investment attraction in knowledge-intensive fields. At the end of the 20th century in the state development concept a new term "Sustainability" appeared, attracting particular attention of society to the ecological aspects in the activities of a state or a region (Atkinson et al, 1998; Gwaptney et al, 2000; European Commission, 2010)

A. Greig has made the calculation that in the analysis of economic processes concept of development may include at least 30 different applications (Greig et al., 2007).

Comparing the energy policy of 1970s and 2000s the remarkable transformation of the energy policy accents could be noticed. The main initiatives of the EU were driven either by the EU internal market idea or by environment protection perspective. However, the coherent common energy policy still was rather illusive (McGowan, 2011).

According to the modern view of international organizations (e.g. OECD), infrastructure is one of the key factors of economic development: it improves the lives of people, promotes entrepreneurship, as well as provides investment (capital) in the national economy. OECD in their research particularly identifies four components of national infrastructure: transport, water management, power supply and information and telecommunication technologies. These elements may vary in different countries, for example, a country may not have railways or centralized heating is not provided, however a common goal of infrastructure establishment is to ensure economic benefits to society and economic sectors, i.e. the entire country (OECD, 2006).

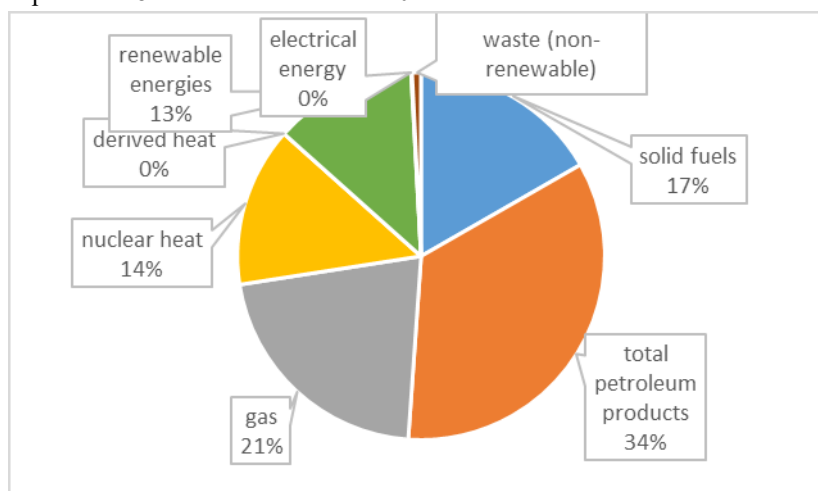
In general, studies show that there are no the right or wrong development strategies, and the mentioned above theories are not mutually controversial. The authors of the theories naturally adjusted them to the appearing challenges of a particular time they were living at. The concept of economic development is dynamic and it could not stay at place; it should sensitively reflect the recent changes.

The EU energy field reform is a big and serious step as it changes the existing understanding of the policy, which has a considerable impact at all the economy – energy. In order to better understand the reason why the reform was actually started, as well as the logical rationale behind the reform, the paper provides a short review of historical process of formulating the idea of economic development.

Energy is a one of the basic sectors of national economy. The overall economic development of a country strongly correlates with availability of energy to society (households and businesses). Energy production and supply as an economic activity is quite complex and includes many aspects being important for competitiveness and welfare of a country. Within the last decades economists try to find the best solutions to address such challenges as climate change, security of supply, lack of competition, lack of interconnectivity between countries and regions, political fluctuations, affordable prices, and other. A number of policy documents and legal acts, such as the 3rd energy package, Renewables directive, energy efficiency directive, Security of Supply regulation, etc., were developed in the European Union (EU) to cure the coming out imperfections. Nevertheless, despite the constantly increasing number of regulations, the existing legal framework is not able to cope with the growing number of recent challenges any more. It is not already enough just to amend a directive or update some guidelines. The problem is that each regulation darn a one particular hole of a coat, usually the most visible, but the patches are not mutually interlinked, so the “coat” becomes looking rather pockmarked. Overall current system in energy policy does not perfectly fit into the mainstream of XXI century, and there is a clear necessity for the conceptual changes in approach as such.

The built in the last century approach in energy supply focuses on large-scale, centralised power production mainly using fossil fuels, as markets are not interconnected well enough. The main aim of the existing system is to ensure a certain area with sufficient energy capacity for efficient development of a region without taking into account other neighbouring regions. In such situation price does not act as a communication mechanism between generation market and final consumers. Consequently, final consumers do not even consider possibility to intervene in market processes, change their consumption paradigm, having a passive role in consumption.

Currently, the issue of energy security stands high on the agenda for all the EU member states. The EU produces only 35% of the consumed gas, all the rest share of gas is delivered mainly from Russia (27%), Norway (21), Algeria (8%) and other third countries. The import dependency makes Europe vulnerable towards external economic shocks and geopolitical pressure of energy sources providers and forces its member states look for energy sources and roots diversification solutions (Eurostat, 2016; Jirusek et al 2015). Moreover, such stable and efficient energy generation source as nuclear heat is a matter of active discussions now. The recent Fukushima disaster is a reason for freezing or even cancelling a number of nuclear power plants construction projects, as well as taking decisions on decommissioning of existing units (Vlcek et al 2015). The energy mix of Europe has been changing under the impact of new challenges. Figure 1 demonstrates the mix of energy sources in gross inland energy consumption in 28 EU member states in 2014.



Source: Eurostat, 2016

Figure 1 Gross inland energy consumption in the EU in 2014

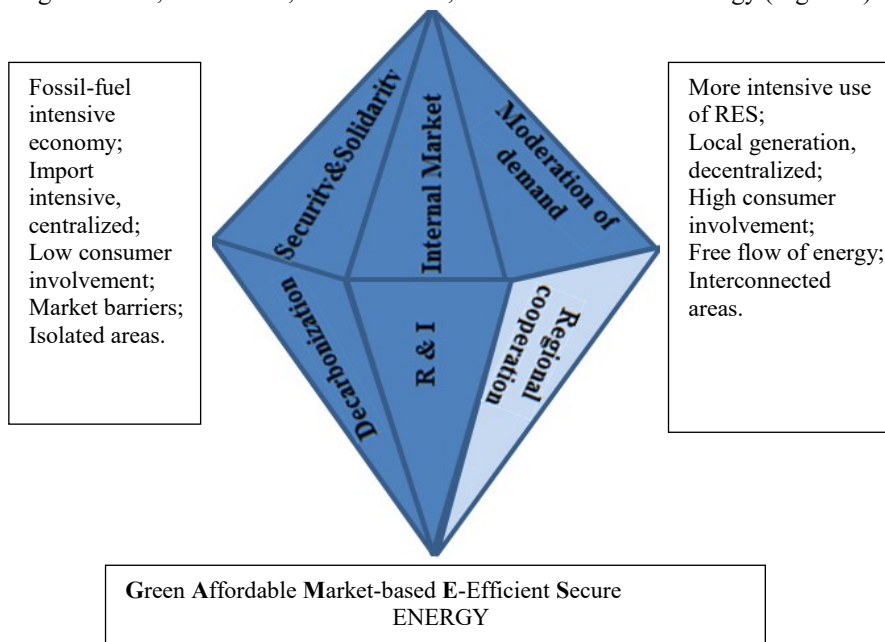
As it is demonstrated in Figure 1, petroleum products, gas and solid fuels take the three leading positions of the European energy consumption basket. However, within the last years, the decentralized power generation has been developed rapidly, bringing new players into market. The share of renewables in gross energy consumption of the EU member states grew from 8,7% in 2005 till 16,5% in 2013 (European Commission, 2015). Consumers get possibility to choose which sources of energy to use by having possibility to install a local energy generation installation, when to consume more or less and what price to pay for that.

Similarly as it was with economic development theories, the energy sector in Europe has reached momentum of turning a new page for writing a new history and adding the new development preconditions.

2 The concept of the Energy Union

During the Latvian presidency in the Council of the European Union the new era of energy field was launched by so called *Riga process*. On 25th of February, 2015 the European Commission came up with a new proposal of a strategy of Energy Union, bringing forward the five action directions (dimensions): Energy security, solidarity, trust; internal market; moderation of demand; Decarbonisation; Research, innovation, competitiveness. The fundamental difference from the previous EU goals in energy sector and the strength of the new strategy – is a common vector of all the mentioned dimensions contributing to the same single target. The five dimensions are strongly interconnected, being indispensable parts of a one puzzle to provide consumers secure, sustainable, competitive and affordable energy. Each of the “pieces” aims not to just solve a one particular problem, but is supposed to ensure a synergy effect with all the other elements of the Energy Union strategy.

As a result of analysis of the former (still existing) EU energy policy on a one hand and the new Energy Union strategy on the other, the authors developed *GAMES* model. The model schematically demonstrates how the dimensions of the Energy Union affect the existing situation in energy sector adjusting it to the new principles focusing on Green, Affordable, Market-based, Efficient and Secure energy (Figure 2):



Source: Developed by authors

Figure 2 GAMES model of the Energy Union dimensions

The schematic model illustrated by Figure 2 shows that the existing energy system in the majority of the EU countries largely depends on fossil fuels. According to statistical data, fossil energy sources make 87,5% out of gross inland energy consumption. The Energy Union strategy provides for more intensive use of renewable energy sources (RES), therewith taking care of ecology and eliminating dependency on price and import volumes of fossil fuels. The strategy promotes less centralized local generation, which is more secure for the energy system, as well as has a positive effect eliminating import-dependency.

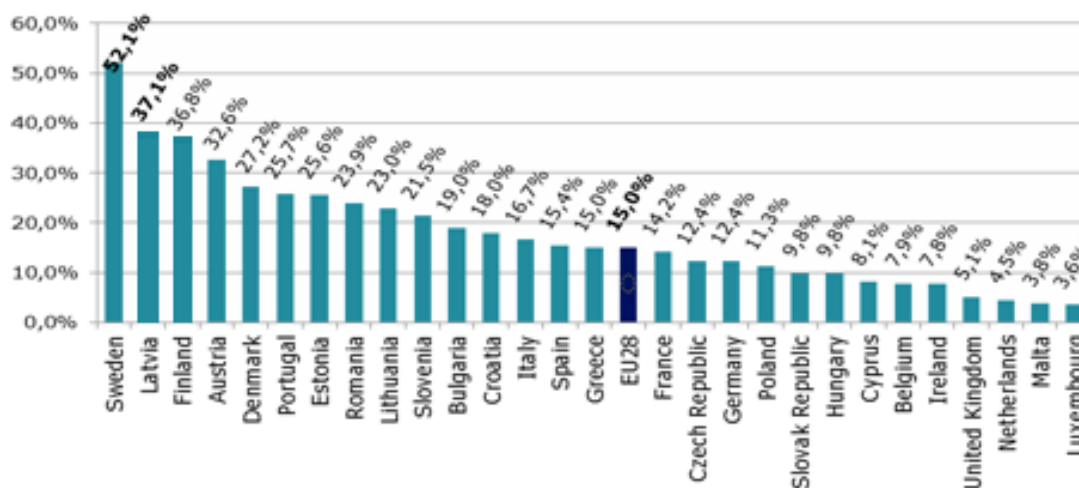
The generation units of the leaving era have been mainly large scale, energy has been mostly provided by a vertically integrated energy company having monopoly on the market, but prices - state-regulated. Consequently,

there was no interest or even possibility for consumers to participate in the market processes. Natural market barriers, first of all, in form of lack of physical interconnections, and, secondly, in legislation existed. The legal acts reflected just the factual situation, excluding any hypothetical interventions from external markets. Europe consisted of autonomous energy islands and peninsulas, which were not connected or weakly connected among themselves, relying on their own capabilities.

Figure 2 shows that the five dimensions demonstrated in form of diamond convert the situation changing the general perception of energy sector functioning. The five priority directions, namely, security and solidarity among the EU member states in case of energy supply crisis, well-functioning EU internal market, demand moderation (enhancing flexibility between energy supply and demand market curves), decarbonisation of economy, as well as research and innovation. In addition to the five dimensions, the authors have particularly distinguished the Regional cooperation as the 6th element of the Energy Union, as it is not possible to create a new system without close cooperation between the EU member states. Cooperation between countries having the same or similar problems is particular important for meeting common challenges (Tuvikene et al, 2015).

Within the *Riga process*, as a result of consultations between the European Commission, the EU member states, politicians, non-governmental organizations, academia representatives and other parties involved, a new approach for the energy policy with a range of legal instruments has been tailored.

As it was already mentioned, within the last decade the renewable energy generation industry has been rapidly developing in the EU member states, therewith decreasing use of fossil fuels, increasing energy supply security due to decentralized energy sources (lower risk in case of disability of a one generation unit) and lower import dependency. The EU member states are doing progress in achieving the target on a share of renewable energy sources in overall energy consumption 20% by 2020 agreed by the European council in March 2007 (European Council, 2007). Figure 3 shows the state of play for 2013 in developing renewable energy generation, demonstrating that the majority of the member states will be able to fulfil the obligations:



Source: Eurostat, 2016

Figure 3 Share of energy generated from renewable energy sources in total energy consumption in 2013

The best results are shown by Sweden, followed by Latvia and Finland. Moreover, even more ambitious target is set for 2030 requiring 27% share of renewable energy. Another decarbonisation challenges are connected with green gas emissions reduction target of 20% in comparison to 1990 by 2020 and 40% by 2030, and energy efficiency enhancement target of 20% by 2020 and 27% by 2030. (European Council, 2007; European Council, 2014).

Integrating renewable energy sources into a common EU energy market presents a key challenge for the EU in the 21st century. With member states anchored to their individual national energy policies and with many obstacles for cooperation on an intergovernmental level, this goal can be achieved only through advanced supranational cooperation (Focken, 2015). This just one of many possible reasons behind the added value of Energy Union within the system of European policies: it is important to establish systematic approach of achieving joint goals simultaneously respecting 28 national targets and individual approaches of EU member states. This is also noticed by other research: Member State governments still have a central position and policy

issues where power is transferred to the EU level tend to be those where Member States see such transfers as in their interest (Wettestad et al, 2012).

Smart meters and smart grids play an important role in involving consumers into the electricity price formation process. With a help of high technologies final consumers are able to decide when to consume more or less therewith reacting on market signals in form of electricity price. Electricity market becomes more flexible, ensuring possibility to rapidly find a new equilibrium between demand and supply curves of different energy generations according to amount of water in hydro electro stations, strength of wind blowing and wind generators or sun intensity shying at solar batteries. Moreover, with a help of new technologies consumers can smartly choose more energy-efficient household and office appliances saving money from their everyday operation. The 5th freedom of the EU – free movement of energy, becomes a reality after building up physical infrastructure (hardware) and connecting energy islands with capable “bridges”. The legal requirements on market operation (software) should be unified and made as simple and transparent as possible. So, a cheap Scandinavian hydro energy could easily flow to central Europe in case of absence of wind or to Mediterranean countries in case of cloudy season. The interconnected regions are to be well-balanced and ready to ensure extra capacities in case of emergency.

The Energy Union debates have uncovered several policy cleavages. The major one is Europeanization versus maintaining sovereignty of Member States in the energy sector. Another is pitching security and affordability against sustainability in the notion of ‘rehabilitating’ fossil fuels versus enhancing renewable deployment (Szulecki et al, 2016). On the other hand the issue of energy efficiency has been acknowledged by EU institutions as a new pillar of the external energy policy. European energy security, climate change mitigation and increased competitiveness should not only be attained by internal EU energy savings measures. These objectives also depend on the reorientation of the economies in EU partner countries towards more energy efficient patterns (Boute, 2013).

Conclusion

Energy field is one of the basic fields of economy having a considerable impact on wellbeing of a region. Due to the new challenges of XXI century, such as security of supply of energy sources, climate change, lack of competition between energy companies, affordable energy prices, and other, there is a clear need to adjust the energy policy according to the emerged needs.

The launched during the Latvian presidency in the EU council strategy for Energy Union ensures instruments for opening the fifth freedom of the EU – free movement of energy. The five dimensions, namely Energy security, solidarity, trust; internal market; moderation of demand; Decarbonisation; Research, innovation, competitiveness, mobilize various EU energy policy instruments and activities streamlining them into one direction, therewith ensuring the synergy effect.

The results of the data analysis and the GAMES model demonstrated that the proposed by the Energy Union strategy solutions have a high potential for changing the directions of energy flow within the EU and outside its borders by stimulating the local generation, building new infrastructure and strengthening existing one, as well as integrating isolated markets into the common energy network. Finally, another important aspect the Energy Union brings is to work not only on development of new legal acts or physical cables and pipelines. The strategy turns people in to active energy market participants with smart behaviour and ability to consciously manage their energy bills.

Nevertheless, the concept of the Energy Union is still young and should be further developed by the EU member states. A range of issues still remains nebulous, so the right balance should be found between such aspects of energy policy, as, for example, regional and national sovereignty, energy supply security and cost affordability, as well as other horns of dilemma.

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**SECTION 6
HORIZONS OF ACCOUNTING**

*FACTORS DETERMINING REPORTING OF INFORMATION ON SOCIAL
RESPONSIBILITY*

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Abstract

Purpose of the article The theoretical analysis of reporting of corporate social responsibility covers numerous scientific and practical aspects, but has no single particular theory. Therefore raising of this problem for the enterprises is quite relevant in scientific and practical aspects, if they want to achieve the real and beneficial implementation of corporate social responsibility (CSR) policy. The present article analyzes the factors, which determine reporting of information on social responsibility.

Methodology/methods It is getting more and more relevant to integrate social, environmental and transparent performance principles into the activities in the current period of savage competition. The important factors of corporate success include not only material and financial resources, but also human resources and social attitude of the enterprise towards the market, society and environmental protection. The research was carried out using the systemic analysis of scientific literature, methods of comparison and generalization.

Scientific aim to distinguish the factors, which affect reporting of social information.

Findings It was determined that reporting of social responsibility depends on the particularity of activity of the economic sector, size of the enterprise, duration of the enterprise's existence, financial situation of the enterprise, its human resources, public relations and environmental protective activity.

Conclusions The analysis of scientific literature revealed that CSR practice differs in each enterprise, but the reporting of social responsibility depends on the particularity of activity of the economic sector, size of the enterprise, duration of the enterprise's existence, financial situation of the enterprise, its human resources, public relations, environmental protective activity. It was determined that when the enterprises report social responsibility, they divide the information on social responsibility into 4 key parts of corporate social responsibility: human resources, provision and improvement of service, public activity, and environmental protection.

Keywords: social responsibility, corporate social reporting, stakeholders, information on social responsibility, socially responsible enterprises.

JEL Classification: M41, M49, Q56

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Introduction

In the period of savage competition the initiatives of social responsibility are regarded as the factors, which improve success of corporate performance. That is the responsibility for activity affecting society and environment and covering the human and employees' rights, prevention of corruption, and environmental protection. Corporate social responsibility (CSR) is the policy and practice of enterprises, when they comply with the laws and international agreements, and at the same time voluntarily integrate the social principles, principles of environmental protection and transparent business into their internal processes of performance. The enterprises have to understand that the important factors of corporate success include not only material and financial resources, but also human resources and social attitude of the enterprise towards the market, society and environmental protection.

The concept of reporting of information on corporate social responsibility has been analyzed by (Išoraitė, 2013; Gižienė et al., 2011; Dagilienė, Bruneckienė, 2010; Grundey, 2008; Dalshrud, 2006; Branco, Rodrigues, 2006; Lea, 2002; McWilliams, Siegel, 2001; and Hopkins, 1998).

The factors, which determine reporting of information on social responsibility, have been analyzed in the works of (Branco & Rodrigues, 2008; Parsa & Deng, 2008; Waddock & Graves, 1997; Barako et al., 2006; Suwaidan, 2004; Rettab, Brik & Mellahi, 2009; Branco & Rodrigues, 2008; Delaney & Huselid, 1996; Macarulla & Talalweh, 2012; Da Silva Monteiro & Aibar-Guzman, 2010; Juščius & Snieška, 2008; Simanavičienė et al., 2012; Šimanskienė & Paužolienė, 2010; Dagilienė et al., 2014; Smaliukienė, 2007).

The theoretical analysis of reporting of CSR covers numerous scientific and practical aspects, but has no single particular theory. Therefore raising of this problem for the enterprises is quite relevant in scientific and practical aspects, if they want to achieve the real and beneficial implementation of CSR policy. The present article analyzes the factors, which determine reporting of information on social responsibility.

1 Concept of social responsibility

Social responsibility has appeared as one of the key forms of voluntary accountability on social and environmental protective performance of organizations. Moreover, it is stated that social accountability provides the organizations with the possibility to substantiate what they are and what they want to achieve, and motivate them for further stages (Bebbington et al., 2008).

In order to learn the similarities and differences of the CSR concept, the analysis of concepts provided by various scientists has been carried out. It is presented in the Table 1.

Table 1. Concept of social responsibility

Authors	Definitions of corporate social responsibility
(Išoraitė, 2013)	CSR is the concept that covers voluntary integration of the social principles and principles of environmental protection into the internal processes and public relations of enterprises.
(Gižienė et al., 2011)	Social responsibility is the relations between the enterprise and society, which reveal the influence of the enterprise's activities on individuals and community; it is the totality of actions, whereby the enterprise attempts to make and maintain relations with all the groups of interested persons.
(Dagilienė, Bruneckienė, 2010)	CSR means the enterprise's relations with the groups of persons interested in its activities: investors, creditors, employees, suppliers, consumers, authorities, and society.
(Grundey, 2008)	CSR is the voluntary obligation of business organizations not determined by laws to take into account and adjust their interests to the interests of consumers, employees, all shareholders, environment, community, other related persons in all the areas of their activities.
(Dalshrud, 2006)	CSR means the way you behave with your employees, environment, interested persons.
(Branco, Rodrigues, 2006)	The involvement of CSR into the corporate performance processes is its responsible activity in attempt not to cause damage to the society by its actions.
(Lea, 2002)	CSR is defined as taking care about social and environmental protection problems in business, including the relations with the groups of interested persons.
(McWilliams, Siegel, 2001)	Actions, which are generated as social good by the enterprise's interests not determined by laws. These are the enterprise' obligations to use its resources in the mode beneficial for the society and to act as social stakeholder with regard to society, and to improve human wellbeing regardless of the direct benefit to the enterprise.
(Hopkins, 1998)	CSR is related to the ethically or socially responsible behaviour of the enterprise with regard to the interested parties inside and outside of the enterprise. CSR increases the social development of interested persons and humans.

It has been discussed about corporate social responsibility in the developed countries of the world for more than half a century. According to (Becchetti, Ciciretti, 2009), the pressure of consumers was the main reason that had determined the importance of CSR in business.

Thus it is to some purpose that similar aspects are also manifested in the CSR concepts provided in the literature. CSR induces the enterprises to start application of the principles of social responsibility in practical activity; therefore it is analyzed as the issue of strategic significance when it is considered how to integrate the social aspects and aspects of environmental protection into the corporate strategy and daily practice.

The table 1 reveals that the CSR definitions provided in the scientific literature are versatile, but they usually cover one or at least several of the following aspects: interested parties, environment, social, responsibility, volunteering, public and moral aspects. CSR covers not only the relations with environment, but it is also noted that CSR means the readiness of the enterprises to take responsibility for their activities.

Following the above CSR concepts, it is possible to state that one of the main characteristics of the socially responsible enterprise is the harmonious maintenance of relations with all the interested persons – employees, users of services, society and environment.

2 Reporting of information on social responsibility from the standpoint of interested parties

The social responsibility is not as useful as it could be if information about it is not reported, so it is important to spread such information among as many interested parties as possible.

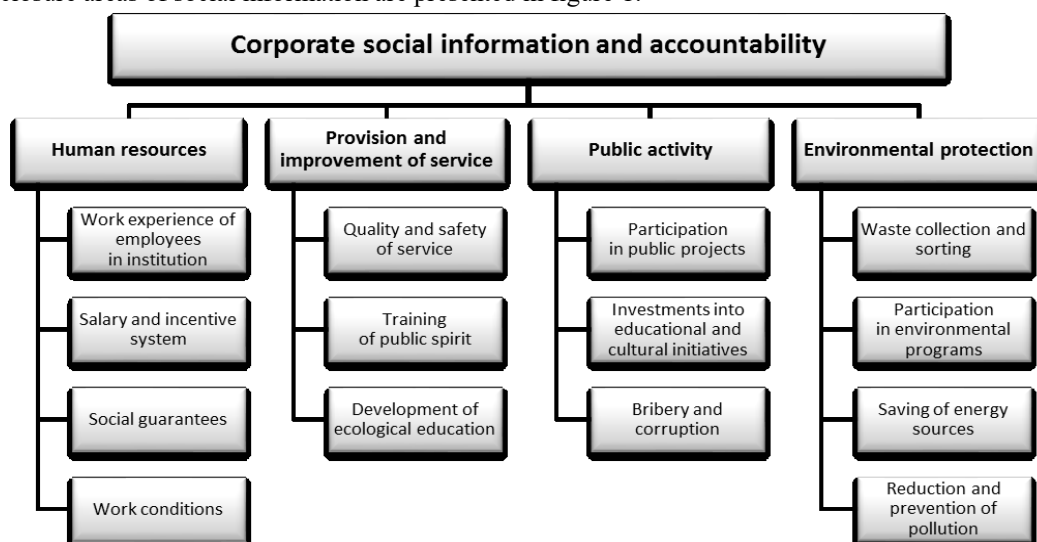
The enterprises feel responsibility to different groups of interested persons, so their actions and decisions are finally related to the degree of influence of each interested party. The degree of power and influence of the group of certain interested persons may force the enterprises to change the agenda, even to correct the long-term plans, and to regulate, how fast the desired or demanded changes are done and what attention they attract (Morf et al., 2013; Yin et al., 2013).

Not all the groups of interested persons recognize the reporting of information on corporate social responsibility in the same way because they do not always find the relevant and important information for them. However if the enterprises want to continue functioning successfully, they have to assess the changing values of the interested persons and to take them into account.

According to (Šimanskienė, Paužuolienė, 2010), the form of reporting of information on social responsibility depends on the character of activities of certain enterprises, their industrial sector and interface with society. 4 key parts of corporate social responsibility are distinguished. They are used to reveal the information related to social responsibility:

1. Human resources;
2. Provision and improvement of service;
3. Public activity;
4. Environmental protection

Disclosure areas of social information are presented in figure 1.



Source: Dagilienė, Mykolaitienė, 2013

Figure 1. Disclosure areas of social information

According to (Mason and Simmons, 2014), the main groups of interested persons expect different things from the socially responsible enterprise:

- The key expectations of the consumers are related to the practical, emotional and public benefit from CSR regarding products and services acquired by them (their choice what to buy motivates the socially responsible business);
- The employees are looking for similar benefit as the consumers, only within the occupation context, i.e. they are looking for practical, economic, psychological and ethical benefit from the employers, and this increases motivation and keeping of the staff;
- The society expects to recognize social obligations of the enterprise, to act in compliance with laws and other legal acts, to report timely and transparent information, and to include the areas relevant and important for the society into decision-taking process.

The services provided by socially responsible enterprises may be manifested by provision of charity and support, expansion of the network of social partners, or social cooperation. The bigger the competition in the market is the bigger power the consumers have over the enterprise (Dagilienė, Bruneckienė, 2010).

3 Factors, which affect reporting of information on social responsibility

CSR is oriented to achieve that the enterprise was regarded as an integral part of society and thus it should contribute positively into the social aims and objectives, even though the enterprises would have to overcome their economic problems by reducing expenses and making new investments in profit-making activities. (Morf et al. 2013, Valackienė, Micevičienė, 2011).

As the enterprises are affected by various interested parties, the information on social responsibility reported by them also differs not only in form but also in the content.

The table 2 illustrates the factors, which determine reporting of information on social responsibility according to the economic sector, size of the enterprise, duration of the enterprise's existence, its financial situation, human resources, public relations and environmental protective activity, which are named by different authors and described the most frequently in the scientific literature.

Table 2. Factors, which determine the reporting level of social information

Factor	Author	Statements
Economic sector	(Branco, Rodrigues, 2008)	The amount and type of the reported information differ a lot when the enterprises are engaged in different economic activities. This difference is related to the pressure of the interested persons and regulations set for different economic branches.
	(Parsa, Deng, 2008)	The enterprises acting in certain economic sectors tend to report more information because of the character of their activities and to orient the reporting towards the consumer in order to show that the enterprise's activity is socially responsible, and thus to improve its image, and to increase the profit.
	(Waddock, Graves, 1997)	The manufacturing enterprises report more information about society, safety and health with regard to CSR.
Size of enterprise	(Branco, Rodrigues, 2008)	Larger enterprises report social information more frequently than small or average enterprises, because they feel bigger pressure from the interested persons due to their expectations.
	(Barako et al., 2006)	The larger the enterprise is, the more probable that it will report information on environmental protection voluntarily.
	(Suwaidan, 2004)	One of the stated reasons is that the managers of larger enterprises understand the benefit they may receive from the information's reporting, while the managers of smaller enterprises tend to think that if they reported more information, their competitive position in the market would get into hazard.
	(Rettab et al, 2009)	When the enterprise is growing, the amount of reported social information also increases.
	(Branco & Rodrigues, 2008)	Larger enterprises have more possibilities to deliver that information to the interested parties than small or average enterprises.
	(Parsa, Deng, 2008)	Larger enterprises have more possibilities to report their social activity and may attribute more resources for improvement of their image.

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Duration of the enterprise's existence	(Rettab et al., 2009)	Older enterprises are less often oriented towards the social responsibility and report social information less frequently.
	(Delaney, Huselid, 1996)	The enterprises, which were established earlier, tend to report more information on their social activity than the newly established ones.
Financial situation	(Macarulla, Talalweh, 2012; Da Silva Monteiro, Guzman, 2010)	The richer and more financially stable the enterprise is, the more social information it reports and the more investors it attracts.
Human resources	(Juščius & Snieška, 2008)	The expansion of human resources covers not only the qualification training, but also the participation of the employees in decision taking, work conditions and creation of value system.
	(Simanavičienė et al., 2012)	CSR in the work place means safe and healthy work places for employees, inducement of employees' consciousness in this area, respect to human rights and their protection at work, creation of equal work conditions for representatives of various social groups; opportunities provided for the employees to learn, to self-improve, and to improve others.
Public relations	(Šimanskienė, Paužuolienė, 2010)	The priority of socially responsible enterprises is the expectations and needs of society. The enterprises, which apply the socially responsible attitude in their activity, stress the importance of their socially responsible activity for society and employees. The consumers have more favourable opinion about such an enterprise, choose its products or services more willingly, encourage their friends and familiar persons to choose such an enterprise, and believe in its activity more.
	(Simanavičienė et al., 2012)	Within the context of CSR community, it is listening to the needs of local community; adjustment of corporate and community interests; philanthropy and voluntary participation in the community and public activities and initiatives; inducement of youth's involvement in business and professional activity; conveyance of knowledge and creation of possibilities for practice.
	(Dagilienė, 2010)	The type of organization's culture determines general aspect of social responsibility.
Environmental protection	(Dagilienė, 2010)	CSR is often related to the policy of environmental protection and reporting of environmental information. However such understanding is too narrow with regard to the researches on social responsibility.
	(Smaliukienė, 2007)	The enterprise that reports more information on environmental protection to certain groups is more valued.

It is difficult to assess accurately the public information on social activities of enterprises due to multiple criteria and wide scope of the concept of social responsibility, while it is even more difficult to evaluate the factors, which determine what enterprises make the social information publicly available, how and why they report it. Therefore the reporting of social information on corporate activities meant to protect nature and on support to society to the interested persons is widely discussed in business practice but little touched in the scientific literature. When the importance of business role in society and social responsibility to employees, society and environment are discussed, it becomes important to learn what enterprises take care to report the information on their social activities, because both the investors and the society regard the socially responsible business with more respect, while the responsibility is valued and has its financial expression.

To summarize, the corporate social responsibility is important for enterprises not because of its impact on their performance results, but because of positive impact on their image and reputation. The enterprises, which implement the policy of social responsibility, take the society's needs into account, coordinate mutual interests, implement social responsibility in the work pace with regard to human resources, and create safe work places. In order to implement the social responsibility, the enterprises use their resources effectively and responsibly, protect environment, carry out socially responsible marketing, take care about the production's quality, and take special need of individual social groups into account.

Conclusion

To summarize, there is no single theory that could be used to explain the factors, which determine reporting of social information. The results of analysis of researches presented in the scientific literature are versatile. There is no single predominant theory that would confirm the factors, which determine reporting.

The analysis of the scientific literature revealed that CSR practice differs in each enterprise, but the reporting of social information depends on the particularity of activity of the economic sector, size of the enterprise, duration of the enterprise's existence, financial situation of the enterprise, its human resources, public relations and environmental protective activity.

It was determined that when the enterprises report their social responsibility, they manifest the information on social responsibility by distinguishing 4 key parts of corporate social responsibility: human resources, provision and improvement of service, public activity, and environmental protection.

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THE VALUE LINE CONCEPT OF INTEGRATED ECONOMY

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Abstract

Purpose of the article The purpose of this paper is to explain the effective use of tools input - output analysis at the level of internal, companywide, mezzo-economics and Macroeconomics.

Methodology/methods Concept of an integrated economy, which the author deals with, consists of two dimensions - value dimension and interdisciplinary dimensions (qualitative). The contribution will be a description - outline the methodology of quantitative values dimension integrated economies. The main tool, enabling integration is the input output analysis. The result of the aggregation process are the economic aggregates at the internal, enterprise level, mezzoeconomics, and macroeconomic. A precondition for the creation of the first-level integration is functionality of the internal accounting system which ensures the feasibility of integration phases. For the sub-sectoral national accounts division of the delivery, depending on which industry were delivered for the manufacturing, for the sub-sectoral national accounts are broken down accordingly, from which the fields were delivered supplies for the manufacturing, for the sub-regional national accounts are broken down accordingly, from which regions were delivered supplies for the production consumption. The left side of sub-national accounts have to be in this form: a) Suitably divided productive consumption according to its origin, ie. Where it was delivered (from different sectors and from different disciplines and from different regions); b) Components production and primary distribution sub GDP and Net Product. In the next phase of the left parties so divided sub-national accounts using a special method of aggregation obtained partial right side of the national accounts. Those special method additionally brings clarity to the entire system mezzoeconomics and allows multiple control of the data obtained. Mezzoeconomics comprehensive system of information can serve as aggregation, and evaluation purposes. The only real reality across the economy as companies and their activities. The system of corporations is too large to allow it to be studied in great detail, every business has while their homelands goals and objectives. What is the hope for the fulfillment of these goals and objectives can help determine precisely the area "mezzoeconomics". Most businesses are not able to determine whether the industry sector and region in which they operate is economically a perspective.

Scientific aim The research on which is reported in this paper, is aimed at the development of methods to automatically integrate structural models for the lower units into an aggregate model for the whole national economy, with a feedback procedure for adapting the partial models to changes emerging from the use of the aggregate model as a tool for economic planning. For easy reference, the type of partial structural models for which the requirement of integration into an aggregated model is fulfilled, is identified here as "*aggregative partial model*".

Findings The findings can be summarized as can be expressed in the knowledge that the decisive prerequisite for integration is a customized data base in enterprises.

Conclusions This paper describes the path of long-term research in the field of mezzo-economics in relation to the corporate balance - to the corporate accounting. It is part of an entire discipline, which is original and has the characteristics of interdisciplinary research extending into sociology, history of economic theories, ethics and theology. The author will also work for many years to the completion. It is a private research, funded from its own resources the author.

Keywords: integrated economy, interdisciplinary dimensions, input output analysis, economic aggregates internal accounting, mezzoeconomics, macroeconomic

JEL Classification: M40

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Introduction

Structural models originated as a tool of economic analysis, to form a link, between aggregate analysis and analytical tools of micro-economics. But soon the basic ideas of structural modelling were applied in very different fields of economics. First, a tendency has appeared to step from models of national economy, made for analytical purposes, to prediction models, which can be used as a tool for economic planning. This prediction, of course, can have two variants, short-term prediction and long-term prediction. Structural models are, by their nature, suitable for short-term predictions and short-term planning, since the speed with which technical development occurs is so high in recent times that it can essentially affect the obsolescence and, therefore, the unfitness of technical coefficients. Long-term analysis requires the dynamization of structural models, i. e. its formal mathematical elaboration to a much wider complexity as well as the addition of models of economic growth, of technical development, etc.

Another area which – simultaneously with the development of structural models from a static to a dynamic approach – is very suitable for the application of structural models is that which can be called micro-economics in the sense that we operate here on lower levels, as opposed to the highest level of the whole national economy, i. e. macro-economics. It was very soon ascertained that each economic unit with statistically verifiable and relevant internal turnover can construct its own structural model. From the point of view of the national economy this model will, of course, always be incomplete and partial, but it can serve as a very valuable tool for analysis and planning of the isolated economic unit. It was shown also that relations in the lower-unit-model can be formulated in a general way and numerically processed (Beran, Findová, 2015; Holá, Pikhart, 2013; Jindrová, 2011).

For better understanding of the contents of this paper the hierarchy of the national economy on which it is based, is stated here. The whole *national economy* is divided into *ministries*, each dealing with a large group of economic activities.

Each ministry is divided into *general directories*, each dealing with a group of products or service, called a “branch”.

Production and servicing are organized in *enterprises*, each of which is reporting to a particular general directory. Some enterprises consist of a number of *factories*.

1 Types of model framework

Ministries, general directories, enterprises, and factories are considered to be lower economic units. Theoretically, it is possible to develop a model for one single workshop of a factory, when its internal cooperation relations are relevant enough.

This method, requiring the construction of models of lower and lower units, is evidently given before-hand in the organization of the national economy under consideration. A number of types of structural models can be developed which equals the number of organizational links in this economy from the lowest units to the whole national economy (freely translated Kumara, Chandra, 2015). But, simultaneously, it is clear, that all changes in the organization of a given economy indirectly affect the system of structural models. This instability has, obviously, great disadvantages because of the nature of structural models (Beran, Findová, Macík, 2014).

Another method should therefore be considered, which does not depend on the actual organization of the economy but on its technological structure, which is invariant to organizational changes and is sensitive only to changes in technical development (Rekha, Deotale, 2014). That is the commodity structure of the national economy, which derives from the fact that a very great number of commodities, labelled by enterprises as “finished products”, are in fact intermediate commodities, which enter into other products, designed for final use. Commodity models, however, are not applicable to the whole national economy, because of the great number of types of products involved (Beran, Findová, 2015). The solution here is given by aggregation of products into product groups and super-groups. These super-groups of technologically similar products are called “branches”. Reviewing the structure from the lowest to the highest level in terms of technological relations, we have: product models, group models, branch models, and the inter-branch model of the whole national economy. Generally, it can be stated that every national economy model, organizational or technological, will have the structure of fig. 1.

This is the classical Leontief n model, where $1, \dots, n$ stands for the number of industries (in the organizational model) or the number of branches (in the technological model).

On the other hand, every model of a lower economic unit (for instance the model of a branch) will have an entirely clear structure, which can be derived from the national economy model by isolating one column and row from this model (for instance by taking the first column and row). We obtain the structure in table 2.

Table 1 Structure of national economy model

	1 n		Final use	Σ
1				
.				
.				
.				
n				
Primary costs				
Σ				Σ Σ

Source: Own research, 2016

Table 2 Structure of a branch model

		1	Deliveries to branch	Deliveries to final users	Σ Σ
		1.....N	2,...., n		
1	1	Internal turn over of branch 1			
	.				
	.				
	.				
	.				
	N				
	Σ				
Deliveries from branch 2,...., n					
Primary costs					
Σ Σ					

Source: Own research, 2016

This has typically a graphical open form, since it is a partial model, which is balanced only in the whole turnover of the given branch ($\Sigma \Sigma$), not in the inputs and outputs of other branches. The quantities $1, \dots, N$ form the internal structure of the given economic unit, for instance in the inter-branch model ($1, \dots, N$) they are the branches, in the branch model ($1, \dots, N$) they are groups of products, etc. (Beran, Findová, 2015).

2 Considerations in setting up the system

Since we can analogically derive models of lower and lower economic units, it is logically clear that we can develop the whole system of structural models, which would correspond mutually and which would make a pyramid of consistent and balanced models from the lowest to the highest economic units (inspired by Skolka, 1982).

The description of the system and data processing of such a pyramid of models is the purpose of this paper.

In creating and conceiving such a system, it is necessary carefully to consider its targets and limits, as well as the fact that the establishment of such a system may affect strongly the amount of administrative work to be performed. Here the question of repayment of the costs of the system, which could be very expensive and rather ineffective, is very important (Kozuharov, 2011). It is also essential whether the organizational or the technological line is chosen. In this problem the rigorous technological point of view of the theory of structural models cannot be applied without criticism. It must be kept in mind that the targets and possibilities of the system are limited and that dynamical analysis cannot be among the first steps developed in its construction (Saxunová, 2014).

After profound examination of the whole problem and on the ground of test calculations and partial or sample applications on practical data, we have arrived at principles which give the possibility to construct such a

system and to start it in practice. These principles are described in the following text and demonstrated by a numerical example (Beran, Findová, 2015).

3 Procedures in system establishment

3.1 The organizational or the technological point of view

First of all, it was necessary to solve the basic conceptual question, which is the choice between the organizational and the technological point of view (Bradley, Fitzgerald, 1988; Isard, 1954). Although the technological point of view seems the only appropriate, it was found that the organizational point of view cannot be fully omitted, because the whole system is, first of all, intended to serve for balancing all contractors to customer relations in the economy and for determining production tasks of production units. Both these problems are solved in the organizational line, as tasks are always set for and orders are always addressed to an individual enterprise. An “anonymous” task for a branch or group is useless for executive management or for issuing an order. For these reasons it was necessary to choose the following variant:

- a) A *branch*, i. e. a super-group of technologically similar products (commodities), is used as a basic model quantity. That is to say, when an enterprise uses for its purposes a detailed differentiation of production (products or groups of products), it must then be able to integrate these details into branches; the construction of an inter-branch model being the main purpose of the system.
- b) The models are constructed for *organizational units*, not for technological units (such as products, groups of products, branches). Under the term of organizational units are meant factories, enterprises, general directories and ministries. Technological units are not suitable for scheduling and planning because of the lack of directiveness (addressiveness).

3.2 Fundamentals of aggregation

The principles to be maintained in aggregation can be expressed as follows: The basic organizational unit is always *an enterprise*. For each enterprise, deliveries *into* the enterprise must be stated in great detail, while deliveries from the enterprise can be stated only in their sum total (from the practical fact that it is impossible to know in the producing enterprise how its products will be used). In getting detailed input data from all enterprises, we can, even without detailed output data, construct a system of aggregative partial models, since the statistics of outputs are from the point of view of the national economy nothing but a double entry of inputs (Andrei, 2013; Polenske, 1976).

It is very important to choose correctly the structure of inputs in enterprise models. The main principle of aggregation in the system lies in the fact that each higher unit will integrate the lower inputs in its main quadrant. The model of the whole national economy will then integrate *all* inputs (equal to all outputs which have been omitted). If, for instance, we consider enterprise models, which must be gradually aggregated into a general directory model and a ministry model, the lowest enterprise models must be constructed in the following form:

Table 3 An example of form of the lowest enterprise model

	Branches		Total
Branches	Internal turn over of the enterprise	The sum of deliveries from the enterprise	
Deliveries into the enterprise from branches produced by enterprises of the same general directory			
Deliveries into the enterprise from branches produced by enterprises of the same ministry			
Deliveries into the enterprise produced by enterprises of other ministries			
Primary costs			
Total			

Source: Own design, 2016

This form makes possible: (a) the automatic aggregation of enterprise models into a general directory model, (b) the aggregation of general directory models into a ministry model and (c) the aggregation of ministry models

into the inter-branch national economy mode. The models of higher units shall then have a more and more narrow structure of input and finally the national economy model will have the classical Leontief-structure.

3.3 Calculations in practical use

In practical use of these models in planning, the following range of calculations shall be made:

- a) Aggregation of all models from the lowest units (enterprises) to the national economy model; here the technical and other coefficients will be calculated as well as the inverse matrices of all models.
- b) Calculation of the new variant of the economic plan, which now represents the task for the lower units. These units receive their tasks simply in the form of the final use vector (Y). This process can be indicated as "segregation". The lower units can receive as their tasks other variables, e. g. the (X) data, i. e. the total amount of production (vector of production), or even the (Z) data, i. e. the matrix of primary costs, or finally the possible combinations of (X, Y, Z).
- c) After segregation a new check aggregation can follow: through the new aggregation, the new variant of the economic plan must be obtained. In this way, all tasks could be transmitted from the highest planning centres to the lowest economic units through this system of aggregative partial structural models, and planning techniques could be substantially improved by well implemented data processing (a systematic network of computers over the whole national economy).

We must, however, always keep in mind that the system must necessarily be supplemented by many other planning and analytical techniques. On the other hand, it can be hoped that after the system is realized and properly put to work in practice, the experience of all workers in this fields will bring about a lasting improvement mainly in the dynamic and optimizing aspects. The optimizing elements can be applied without difficulties in the sphere of the enterprise, while the dynamic elements should be brought in the sphere of the national economy.

4 Discussion

Finally, we must discuss the very important question of collecting the necessary data. It is well known that up to now structural models have been constructed on data acquired through special statistical investigations (freely translated Rabitz et al., 1999; Sandberg, 1973). Considering that the system could be threatened by the difficulties of data collection, we decided to choose quite a different way. In our economy, accounting and statistics are completely unified and standardized. Enterprises must regularly send in their reports, which are numerous, but which are often exploited much less than would be desirable.

After analysis of the present system of accounting we have come to the conclusion that with comparatively little adjustment in the accounting of inventories, production, and sales for creating the system of aggregative partial models, not only balance sheets and other reports, but also models of the given enterprise could be made automatically at the end of each month (inspired Jianu, 2012). This structural model, constructed directly from normal accounting data, just as every other accountancy report, is the base of the system of aggregative partial models, which are then available every month as a by-product of accounting work, without special investigations needed. A method has been developed for entering the accounting data into the models. It is obvious that it was necessary to solve numerous problems, for instance the allocation of costs, the problem of different "indicators", different meanings of "final use" in different spheres of economic life, etc.

The system has been applied successfully in the ministry of machinery and will be put into action for the whole of the national economy.

Conclusion

The method of structural models originally came into existence as a method of national-economy analysis and as a valuable supplement of the so-called social accounts. Only later on this method was worked out for lower economic units. However, up to this time only isolated operative models have been devised in most cases, either for experimental reasons or for checking the enterprise plans. The paper shows the possibility of creating a whole system of structural models which on the one hand link up with accounting and the system of microeconomic and macroeconomic indexes, and on the other hand are capable of aggregation, that is to say, it is possible to set up a model of a higher unit of the models of lower units. Special stress is laid on the automation of the setting up of a model and also on the automation of model aggregation. This automation means that the data in the model are linked up exactly and in detail with enterprise accounting and that an exact process of aggregation from the lowest to the highest units (or vice versa, in the case of specifying the targets) has been worked out.

This paper is a digest of a larger work dealing with the possibilities of creating a system of structural models in our national economy.

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*INTEGRATION OF ACCOUNTING AND MARKETING IN RESEARCH AND
DEVELOPMENT ACTIVITY OF AN ENTERPRISE*

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Abstract

Purpose of the article Presentation of the effect of research conducted by the authors at the behest of an enterprise based in the Podlasie Voivodeship.

Methodology/methods Goal realization was based on a case study which in social sciences, including economic sciences, is a recognized research method allowing for the observation of a wide perspective of the issue being studied. Other than the case study method the method of scientific description was also used employing subject literature, Polish regulations of accounting law and international standards of accounting.

Scientific aim The aim of this article is to try to identify areas of integration between marketing and accounting in the realization of research and development activities.

Findings The first field of integration of marketing and accounting is the need to conduct an initial market analysis and ascertain the prospects of its development in terms of demand for the new product at the moment of progressing from the research stage to the development stage, to make changes in the records of expenditures and to express them in the financial report. The next stage of integration is the expression of accrued expenditures for development work at the time of their completion.

Conclusions The case of the surveyed enterprise confirms the complexity and importance of the innovation processes, especially in the context of research and development activities being carried out. The analysis shows that the implementation of this research is the result of the involvement of all functional areas of the organization, among which the accounting and marketing functions are significant. The indicated case study confirmed the benefits of integrating the accounting and marketing functions in connection with the implementation of research and development activities, thus having an influence on reducing the risk of failure of a new product on the market.

Keywords: research and development activity, accounting, marketing, integration between marketing and accounting, intangible asstes.

JEL Classification: M21, M31, M41

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Introduction

The following work is the effect of research conducted by the authors at the behest of an enterprise based in the Podlasie Voivodeship. More and more often businesses emphasize innovativeness which results in a growing engagement in research and development. The goal of innovative activity is increased competitiveness and the enhancement of the company's functioning through creation of new or improved products, technologies and processes. Demand models of innovative processes assume that the needs expressed by customers are the stimulus for the creation of innovation. The initial phase of these types of models is the identification of market ability and opportunities later followed by designing, preparation, testing and implementation of a new product or process (Boniecki and Grabowski, 2007).

Very important for research and development activity is the ability to differentiate research activity from developmental activity. These processes are sequential – after the conclusion of research the entity makes a decision whether it should move on to the next stage, developmental work. In business practice these types of activities result in assets which are physical (such as a prototype), but the main effect of this work is scientific and technological knowledge, having no material dimensions, that can become useful in the economic sense. The entity should express expenditures for research and development activities in accordance to the standing national accounting regulations. Accounting law requires the fulfillment of specified conditions regarding including these expenditures as an element of intangible assets in the financial report. Despite existing legal regulations an important and still valid challenge to accounting today is the differentiation which types of activities should be identified as research work and which as developmental activity as well as whether research should be expressed as an element of intangible assets (Kabalski, 2014; Comporek, 2014; Turek, 2013; Krasodomska, Jonas, 2012). Fulfillment of the conditions stipulated in accounting law should be performed by people specializing in the relevant economic field. The main problem consists of including as intangible assets only the cost of research and development work of the entity. Research and development departments are responsible for identifying the criteria and developing procedures for assessing the possibilities of progressing from research activity into the next stage of the innovation process and the continuation and successful completion of developmental work. The procedure defining the manner in which an entity should act in qualifying expenditures into the correct stage of the innovation process and assessing their effects, should be introduced into the accounting policy applied by the entity. Users of general financial reports receive information about applied ways of assessing implemented innovational activities which in turn also determines their value and the presentation of expenditures in the financial report. From the perspective of financial accounting essential is the classification and recording of expenditures on research and development, an important balance sheet category strongly connected with the innovation process of an enterprise, and expressing them in the financial report. Research and development activities demanding considerable outlays are seen through the prism of their uncertain gains realized sometime in the future and not always clear-cut (tangible or intangible) results. Marketing, on the other hand, concentrates on the causes and effects of research and development work as one of the factors determining the creation of lasting relationships with customers based on fulfilling of their needs. In respect to this issue there seems to be a lack of integration between marketing and accounting approaches. This confirms the existence of a cognitive gap in the scope of studies conducted on research and development work and at the innovative development of enterprises through the implementation of accounting and marketing perspectives. It is therefore necessary to seek and identify factors which will facilitate the integration of accounting and marketing in the area of research and development activity.

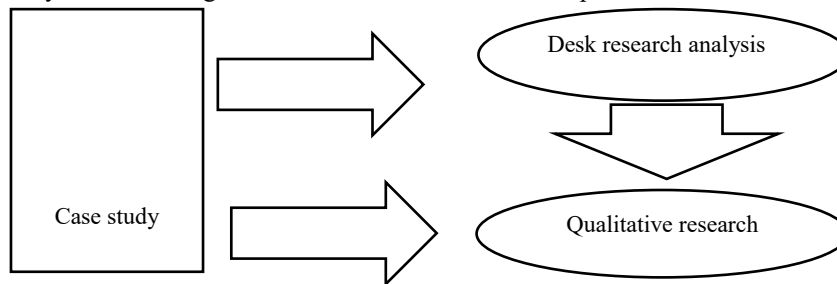
The aim of this article is to try to identify areas of integration between marketing and accounting in the realization of research and development activities. A research goal stated in this manner demands answers to the following research questions:

- 1 How can information regarding research and development activity generated by marketing and accounting, both within the enterprise and by the enterprise, be connected?
- 2 To what extent do accounting and marketing determine the validity of implementation of the results of the research phase and transition into development work?
- 3 How do marketing and accounting influence the assessment and presentation of in progress and completed development work in the financial report?

1 Methodology

Goal realization was based on a case study which in social sciences, including economic sciences, is a recognized research method allowing for the observation of a wide perspective of the issue being studied. Even with the need to focus on a defined research subject this method allows for an analysis of many variables and properties as well as describing the stipulated phenomenon from numerous perspectives (Zainal, 2007). For the

purposes of this work an example of an innovational enterprise located in North-east Poland whose main business activity consists of introducing to the market products improving the functioning of modern farms was used. The case study analysis was, in this case, participatory in nature. The authors co-created a document assessing the validity of introducing to the market a new innovational product.



Source: Autor's own elaboration

Figure 1. Methodology of research

Supplementary methods of desk research analysis as well as qualitative research (see Figure 1) were used in the case study. As part of the desk research analysis the following assessments were performed:

- economic potential of the considered enterprise;
- potential of the national and international market on which the considered enterprise operates (mainly in the context of analyzing customers and competition);
- market potential of the newly introduced product.

The research process had several stages. The first stage consisted of becoming familiar with materials made available by the company being studied. Next, an analysis of publications and various materials concerning the development of similar innovational products in Poland and around the world was performed. Based on those and on information contained in available data bases, analyses of competition and customers using the subject-oriented approach (direct and potential competition, closer, further), the geographic approach (national and international competition) and market segments (with special consideration for target market) were performed. At the same time an analysis of the economic capabilities of the company being studied connected to the realization of the implementation process of research activities was initiated. On the basis of desk research and economic analysis the formulation of lists of expert questions were prepared and then distributed among dedicated respondents. IDIs were conducted by 20 experts performing market assessment of perspectives of introducing a new product onto the market. The selection of study participants was deliberate. The obtained research material allowed the formulation of conclusions and recommendation for the company's innovative project considering the dual context of accounting and marketing aspects in the implementation of development work.

Other than the case study method the method of scientific description was also used employing subject literature, Polish regulations of accounting law and international standards of accounting.

2 Research and development work from the perspective of marketing and accounting

2.1 Research and development work from the perspective of financial accounting

In order to determine the type of performed activities and to classify them into appropriate groups of activities connected to innovative activity of the International Accounting Standard 38 – Intangible assets (IAC 38, 2011) activities were divided into two stages. Research became the first stage of performed activity within the implemented innovative process. In accordance to IAC 38 (IAC 38, pg. A1024) research "is an innovative and planned search for solutions undertaken with the intention of gaining and applying scientific and technological knowledge". The Accounting Act currently valid in Poland (Polish Accounting Act, 1994) does not define these categories, does not list the scope of these activities or the type and character of outlays made for development activity. It only specifies conditions enabling the capitalization of the costs of completed development work. According to the current basic definition of assets only those expenditures which will in the future bring the entity economic benefits can be expressed in the balance sheet. Outlays made for research are qualified entirely as costs at the moment they are incurred and this means that the assumption of a high level of uncertainty as to the results of these costs as well as proving future economic benefits connected to them must be accepted.

The next stage is development work which, according to IAS 38 (IAS 38, pg. A1023) "is the practical application of scientific discoveries or achievements attained through other knowledge in planning or designing the production of new or significantly improved materials, devices, products, technological processes, systems or services and which occurs before the initiation of mass production or application". In accordance to Polish accounting law when development works conducted by the entity for its own needs are successfully completed and therefore the decision to implement their results is made, the costs connected to them (incurred before the start of production or implementation of the technology) are included in the balance sheet as intangible assets. This is the reason the entity must prove that it fulfills the conditions accepted in the definition of assets and the conditions permitting development activities to be recognized as assets. According to IAS 38 an element of intangible assets created as a result of development work should be expressed in the financial report when the entity can prove, beyond its technical attributes, the intention of its completion and use or sale, the ability to use or sell it, manner of creating future benefits as well as the availability of technical and financial resources which will ensure the completion of development work and will permit the use or sale of such an element. On the other hand one of the conditions included in the Polish Accounting Act for expressing these activities is that the costs of this work will be covered – according to forecasts – by profits from the sale of these products or the application of this technology. It is necessary, therefore, to document the reimbursement of the costs of development work incurred before the start of production for the market, as being very highly probable after the start of production and sale of new or improved products. Because of these conditions marketing information defining the plan of introducing the new product as well as the gathering and processing of data concerning customers and from customers are required. The assessment of the effectiveness of the conducted research and development work is only possible when outlays made toward it as well as obtained results have been measured. Information resulting from the analysis of market opportunities and the fulfillment of conditions from the perspective of accounting complement each other.

In conclusion, the process of innovation is long, requires making various expenditures, obtaining appropriate sources of financing, and its effects are difficult to predict. From the perspective of financial accounting it is important to differentiate between research and development work as well as decide about the capitalization of outlays for development. This requires proof of the availability of resources for the completion of this work as well as marketing knowledge connected to market research and the assessment of the benefits these activities will bring the enterprise. Outlays for development work are expressed as costs the moment they are incurred and in case of research the element of assets is not created. When it comes to the costs of development whether they are expressed depends on fulfilling the condition that the incurred expenditures will contribute to the generation of economic benefits in the future.

2.2 Research and development work from the perspective of marketing

In marketing research and development activities are not a clearly separate and defined marketing category. However, they are an important component of marketing undertakings oriented at improved fulfillment of target market needs. The main challenge of modern marketing in constructing lasting and long-term relationships with customers and is connected to making decisions influencing the improvement of customer satisfaction, price setting, distribution, improving customer service (Gaskill, Wiznar, 2014) as well as improving promotional activities and expansion of product offer. This demands continued activity aimed at the improvement of the process of retaining current customers and gaining new ones. The indicated range of decision-making is part of the essence of research and development activities encompassing creative work undertaken in a systematic manner with the goal to increase knowledge and utilize it to create new applications. From the marketing perspective "extending knowledge" should lead to the development of a product offer which will strengthen relationships with existing customers but also gain new ones. This type of situation drives the entity to develop innovation which is mainly product related innovation but also includes technological innovation. Customers wait for new quality and this is not possible without creating new products, technologies, approaches and systems in a way ensuring the elevation of the level of their satisfaction and loyalty (Dobiegala-Korona, 2010). It should be stressed that a very strong connection exists here. Research and development work from the perspective of marketing is not only a question of internal management within the company. Within the concept of marketing (especially relational marketing) the customers are not only buyers of new products but also the creators of new product and technological concepts (Mahr et al., 2014). Therefore, from the perspective of marketing the results of research and development work will not be assessed solely through the prism of only technology or novelty but will reflect the acceptance of the customer for those new products and the expression of his engagement (indirect or direct) in the process of their creation.

The progress of research and development work depends on creativity which is one of the pillars of marketing activity. Strong and direct dependencies exist between creativity and innovativeness of an enterprise.

Creativity is perceived as an "engine" in the creation of new concepts and ideas including the development of R&D. Within this context creativity is often defined as creation of useful and valuable products, services, ideas and procedures through the cooperation of entities (Woodman, et al., 1993). Marketing also considers the organizational aspect of conducting research and development work in an enterprise. It concerns mainly the effectiveness of the process of exchanging information and knowledge obtained from the customers. Creation of new products whose emergence depends on research and development work is based on the possessed unique expert knowledge (Dreschler et al., 2013) which in turn is developed through the innovational awareness of management (Yuan et al, 2014).

In conclusion research work is not an isolated marketing category but rather holds a special position in the area of marketing activity connected with the development of new products and services but also in gathering and processing of knowledge about customers and from customers.

3 Areas of integration of information originating from marketing and accounting – research results

3.1 Case study edscription

The conclusions have been supported by the results of the analysis connected to the assessment of an innovative undertaking concerning the implementation of a new technology, namely RFID, carried out in 2014. The realization of this task was accepted by a company which has been the subject of the analysis mentioned above, and whose main area of activity includes the development and production of systems for the identification of farm animals as well as systems for the control of industrial processes. The enterprise conducts research and development work in the field of technological science which contributes more than 30% of the overall profits from sales. The main aim of the enterprise is to gain a strong position on the market of identification products based on RFID and on the wider market of farm automation. The carried out desk research analysis consisted of two stages. In the first phase an assessment of the enterprise in the context of attained financial results was conducted. The analysis showed: an elastic structure of assets; importance of intellectual capital which is not reflected in the accounting value of the company; a correct capital and asset structure including a high share of own input in financing of assets and a large amount of financial independence; retention of generated profits toward the development of the company; ability of the company to generate profit. The analysis also exposed deficiencies such as: adrop in the value of assets;a slowing trend in the rise of profits from sales; faster rise in costs than profits both from the main field of operation as well as from the entire business activity.

The second stage of the desk top analysis concerned the level of market attractiveness of the planned undertaking. It was assessed that the enterprise intends to prepare a system which is attractive not only on the national scale but to international markets as well. The analysis also confirmed that besides extending the size of the market the improved product, being the effect of the implemented project, will make it possible to enter new market areas not connected with animal husbandry (such as logistics, hospitality, health and safety, mining). The results of the desk research analysis were expanded with a qualitative study conducted using the IDI method and carried out among potential buyers of the new product. In total 60 extended interviews were conducted on two groups of respondents. The first group consisted of experts possessing scientific knowledge or practical experience of the RFID field. The second group was made up of farmers whose main occupation was animal husbandry since, in accordance with the concept of the development of the new product, they were the target market group. Targeted selection was used in the process of choosing the participants. Qualitative research made possible the identification of market success factors for the product being considered. External positive factors included (among others): civilization and social development based on mobile systems, informatization of society and business, favorable structure of agricultural production, decreasing share of traditional farming changing to more innovative methods of farming and animal husbandry, favorable tendency regarding the age of those managing agricultural production leaning toward younger people (innovators) or those who accept innovation more readily,diversity of domains and targets expressing the need for locating systems due to the variety of ways to apply them, locating systems are a product within an early phase of development which favors intensity of sales both in the areas of B2B as well as in B2C. the concentration of the market of locating products and how well its organized creates greater opportunities for functioning within these structures. The following factors limiting the market success of the new product were identified (among others): low level of knowledge about locating systems among target groups, especially farmers, unsatisfactory levels of brand recognition among potential target groups of the company being analyzed, the need to generate marketing costs connected with product expansion,high competition, short life span of innovational products,low level of trust to innovative products among farmers.

The completed desk research analysis and qualitative study confirmed the ability of the company to conduct innovative activity focused on new products and technology. The enterprise intends to execute a highly

innovative research and implementation project in a field which is constantly evolving (advanced RFID solutions) and is being developed by literally only a few companies in the world. The result of work being performed will be the creation of both a product which is innovational on the world arena as well as a technology on the basis of which this product will be created. The research also confirmed that the project is fully justifiable on both the market and the business plane. One of the more important goals of the company is further development of sales. The enterprise belongs to the MSP sector where the augmentation of own input through additional financial sources, in this case EU funds, is essential to ensure their development, leveling their chances in the face of unfair competition with large economic entities. Acquisition of additional financial resources will make possible the introduction onto the market of a world class innovative product which the company has developed and which is ready to be introduced onto the market. This company has found an area of business and technological activity in which a small enterprise could become a global entity. The analysis also shows that the undertaking has a definite economic and market justification.

3.2 The identification of the areas of integration

The evaluation of the project related to the introduction of a new and innovative product on the market has been analysed. It has been assumed that the planned research and development activities of the surveyed enterprise will be held in two main parts:

- carrying out industrial research and development activities leading to the development of a new and worldwide unique product (phase I – research);
- implementation of the solution created to produce, and bringing it to the market (phase II – implementation and investment).

As a result of phase I, a technically advanced and software operational prototype system will be created (hardware and software). Whereas the result of phase II will be adding to the company's offer of a new product constructed according to the principles of functioning and the parameters developed in phase I.

The research which the company intends to carry out as part of the phase I is the industrial research. The activities will include primarily expenditures associated with acquiring new knowledge about the functioning of specific technical solutions based on the technical analysis of parameters of the functionality of available solutions, whose proper selection will allow to construct a new product. The result of this phase is the selection of the most optimal solution. The result of the analysis of the technical solutions used by the competition is to determine whether the system built on the basis of the selected solutions will be competitive enough in relation to the existing solutions. In this phase the company intends to develop the knowledge and experience connected with technical problems, and to define one or more variants of solutions related to the implementation of the project. The expenditures in this phase include: the purchase of hardware and software, research equipment, the purchase of external experts services, the R&D personnel work-related costs. From an accounting point of view, all the expenses associated with this phase, the surveyed enterprise includes in the costs upon their incurrence.

In the phase of industrial research, the company intends to acquire new knowledge necessary to create a new product. The results of this phase will be the subject to further research being continued in the development phase. The development phase will allow to translate the results of industrial research into the plans, assumptions and projects related to the new product. It means all the work associated with the creation of a properly functioning prototype, which guarantees obtaining the assumed parameters and functions in the target production, and testing in the scope of selected new solutions. The costs of the development phase are recognized in the records as the development activities in progress. Whereas all the activities following the creation of this prototype are qualified by the enterprise to the implementation and investment phase. The company has made the transition to development activities conditional upon the analysis of the market and the prospects of its development in terms of demand for the new product and the estimation of future revenues from sales on its basis. In accordance with IAS 38 (IAS 38, pp. A 1034) an intangible asset resulting from the development activities or the implementation of the development phase of the internal project is recognized when the entity is able to prove, inter alia, „the way in which the intangible asset will generate probable future economic benefits. Among other things, the entity can demonstrate the existence of a market for products arising due to the asset or for the asset itself, or – if the component is to be used by the entity – the usefulness of an intangible asset”. In accordance with the Accountancy Act, intangible and legal assets include the costs of completed development activities, when the effects and full costs are known (Kabalski, 2014). The classification may occur when „the costs of development activities have been covered, according to projections, by the revenues from the sale of these products or from the use of technology” (AA, art. 33, para. 2) The classification of expenditures to the assets after the research phase can take place not only after fulfilling the conditions from the technical point of view, the availability of technical and financial resources, but also proving the effect of the activities, that is developing economic benefits in the future. For this purpose, the surveyed enterprise has

commissioned an analysis of the market, the needs of the target markets, the probable customer behaviours. The importance of this phase is often underestimated by the management. This phase aims to show whether the product will be accepted by purchasers, especially by those from the target group. On this basis, the enterprise has determined the volume of sales, the planned costs and the target profits of the implemented research and development project.

The implementation of the research and development activities will be based on the market analysis, supported by the knowledge of the needs of the target markets, both in B2B and B2C relationships. It means that the enterprise cannot make the conducting the development activities dependent on solely on the basis of the owned intellectual and technological capital. It is aware that the processed and generated knowledge in the form of research and development activities must be useful from the perspective of customers. The enterprise evaluates the potential of the market based on both ex post analysis, as well as the ex-ante analysis.

The case of the surveyed enterprise confirms the complexity and importance of the innovation processes, especially in the context of research and development activities being carried out. The analysis shows that the implementation of this research is the result of the involvement of all functional areas of the organization, among which the accounting and marketing functions are significant. Marketing stimulates the creativity of the enterprise and motivates research and development departments to develop new technologies and products. The main task of accounting is to assess the efficiency of research and development activities as well as their records and presentation in the financial statement. When assessing research and development activities, it is also important to make full use of intellectual capital of interdisciplinary teams of people with not only technical knowledge, but also accounting and marketing knowledge. The indicated case study confirmed the benefits of integrating the accounting and marketing functions in connection with the implementation of research and development activities, thus having an influence on reducing the risk of failure of a new product on the market.

4 Discussion

Implemented research and development processes are an element of accounting. In economic practice it is not always possible to unequivocally qualify them to the correct phase. Research work does not guarantee positive outcomes and it cannot be clearly ascertained that their final result will be able to be used economically. Therefore, there result is a need to express outlays for research as costs at the time that they are incurred. A condition in being able to classify expenditures made before initiation of production on the industrial scale, meaning those made for research activity, as intangible assets, is to complete them and at the same time fulfill the requirements contained within the accounting act. If the research work being performed does not completely or in part realize the criteria for their activation, there is no certainty as to the positive results of their implementation, than the expenditures are classified in full as costs at the moment the negative conclusion of their ability to be implemented is reached. These requirements make it necessary to conduct preliminary market studies prior to making a decision about progressing from the research stage to the next step of development activity, since their continuation is both costly and risky, and at the moment of completion of development work and including it in intangible assets. If in practice there it is not possible to separate research work from developmental activity the total of both these activities is treated as research and the full costs connected to it are expressed in the balance sheet.

The first field of integration of marketing and accounting is the need to conduct an initial market analysis and ascertain the prospects of its development in terms of demand for the new product at the moment of progressing from the research stage to the development stage, to make changes in the records of expenditures and to express them in the financial report. Most often the cost of developmental work in progress is expressed in the balance sheet at the cost of their production as an active accrued expense. In keeping with the Accounting act (art. 10, par. 3) when there are doubts it is possible to use the International Accounting Standard (IAS). According to the IAS not only completed development works but also those in progress, if they fulfill defined conditions, are included as intangible assets. The next stage of integration is the expression of accrued expenditures for development work at the time of their completion. As stated in accounting law it is supposed that costs of development work at the moment of qualifying them as intangible assets will be covered in full by expected profits from sales. In this case it is also necessary to prepare financial information confirming the estimated gains resulting from applying the effects of the development activity. This requires that an estimate of the expected profits from the sale of the new product is made. At the moment of completion of developmental work the expenditures accrued are the basis for the estimation of the element of assets at the time of their expression in the books.

It is also necessary to verify future economic gains for every balance sheet day so that a write off can be made for loss of value. Another region of integration of marketing and accounting information is the planning of sources of financing innovative activity. This area also requires the confirmation of attained financial results and

the possibility of using external sources of financing with consideration of the time of completion of subsequent phases of work being conducted which requires the estimation of planned results, not only the costs but also profits from implementation. In accounting attention is paid first of all to the cost connected to research and development work, expressing them in the budget and controlling of their actual cost. Too little consideration is given in the estimation of gains connected to them. In case of product innovations this means profits from product sales and that requires cooperation of the accounting and marketing departments.

Conclusion

Only integration of activity in the fields of marketing and accounting effects the full realization of research and development work of an enterprise. Marketing perceives research and development as a type of activity which contributes to a fuller fulfillment of the needs of target markets. It forces, therefore, the implementation of ex post and ex ante activities directed at ascertaining market potential and the behaviors of customers. It transforms technological knowledge into a product which makes it easier for the customers to achieve gains from its use. Accounting supports and organizes marketing activity through detailed recordkeeping of accrued expenditures and profits. Despite the existence of such obvious common points accounting, limited by accounting law, does not always have at its disposal tools to conduct market research which can prove the effects of research and development work and that means that very often the assessment of the same endeavor from the perspective of marketing and accounting may differ.

The factor which may be favorable for the integration of the marketing and accounting functions in the matter of research and development work is the preparation of documentation for the acquisition of external sources of financing innovative undertakings, and especially additional funds from the EU, as can be seen in the example of the enterprise which is the subject of our study.

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*THE ECOSYSTEM OF CROWDFUNDING: STRUCTURAL ELEMENTS,
VALUE-BASED LINKAGES, AND THE FACTORS OF ENVIRONMENT*

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Abstract

Purpose of the article The ecosystem approach was transferred from biology to business in order to help businesses deal with the complexity of nowadays business environment. Such approach is employed in various industries and may also be applied on crowdfunding. The environment crowdfunding operates in is complex as it is an IT-based global phenomenon, includes unexperienced backers (investors), businessmen, and mainly deals with early stage companies. The application of the ecosystem approach on crowdfunding is also grounded by the novelty of phenomenon – gaining a deep understanding of it is crucial for proper functioning and achievement of related benefits, such as job creation and economic recovery.

Methodology/methods A scientific literature review on business ecosystems is performed in order to clarify the definition of business ecosystems and name their main features. The theory on business ecosystems is applied on the phenomenon of crowdfunding in order to take a look at the phenomenon from a novel perspective.

Scientific aim to provide a view on crowdfunding as an ecosystem.

Findings The paper describes ecosystem of crowdfunding as a constantly evolving system of structural elements working together due to existing mutually beneficial relationships in the context of complex business environment. The latter analysis of the crowdfunding ecosystem is based on naming (a) the structural elements, (b) mutually beneficial relationships (value-based links), and describing (c) the environment (enablers, drivers, barriers). The characteristics of crowdfunding ecosystem are presented in the table format as well as mapped in the picture.

Conclusions The research provides a theoretical view on crowdfunding ecosystem. Consequently, limitations apply in case of adapting it for a certain country or specific industry. The structural elements and value-based links should be reconsidered and adjusted. The view of crowdfunding ecosystem could serve as a basis for future empirical research.

Keywords: crowdfunding; business ecosystem; value; startups; entrepreneurship;

JEL Classification: F65, M13, M20, L26

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Introduction

Entrepreneurship has recently received increasing attention; it is named as one of the priorities of the European policy (Entrepreneurship 2020 Action plan, the Horizon 2020). Despite this, entrepreneurship is still considered very risky and this leads to the situation, when entrepreneurs aiming to implement innovative ideas often face difficulties obtaining finance from traditional sources, such as banks, credit unions and etc. This is why new innovative funding sources, such as crowdfunding, become particularly significant. Crowdfunding is defined as a method to establish the connection between the business (entrepreneurs), who seek to raise capital, and backers (investors), who are ordinary people willing to back with (or invest) small amounts of money through internet-based intermediaries. The legal acts to empower crowdfunding (especially equity-based crowdfunding) are in preparation in many countries around the world. A breakthrough in this field was the JOBS Act in the USA signed into account in 2012 (Levine & Feigin, 2014; Morsy, 2014). Due to the novelty and magnitude of the crowdfunding phenomenon, it is very important to analyze it and thus create the environment capable of empowering it.

Reeves, Levin, & Ueda (2016) state that nowadays the world companies operate in is increasingly complex: “business environments are more diverse, dynamic and interconnected than ever – and far less predictable” (Reeves *et al.*, 2016). They believe that an increased percentage of failing companies is influenced by the fact that they fail to adapt to the increasing complexity of the operating environment. In their literature based study of business ecosystem phenomenon Majava, Kinnunen, Kess & Leviakangas (2014) name the reason for increasing complexity of business environment – “fast emerging and converging technologies combined with accelerated globalization”. Consequently, they state that “industry competition is moving from the company-level towards business ecosystems, where organizations must develop mutually beneficial relationships with each other” (Majava *et al.*, 2014). An idea that companies able to create and exist in healthy ecosystems ensure vitality to the business is also expressed by Kim, Lee & Han (2010). In order to address the issue of adapting to complexity, increased dynamics, interconnectivity and unpredictability of the business environment, employing a business ecosystem view is proposed by Reeves *et al.* (2016), Majava *et al.* (2014), Vaz, Nogueira, Rodrigues & Chimenti (2013), and others. In this paper it is aimed to provide such a view on the phenomenon of crowdfunding.

The *paper aims* at providing a view of crowdfunding as an ecosystem. Thus, the *research problem* is: how to view crowdfunding as an ecosystem? In order to achieve the aim, a scientific literature review on business ecosystems is performed. The theory on business ecosystems is applied on the phenomenon of crowdfunding in order to take a look at it from such novel perspective. The model for the ecosystem of crowdfunding, which includes structural elements, value-based links, and the factors of environment, is proposed.

1 The concept and features of business ecosystem

The notion of ecosystem was introduced to the dynamic world of business a few decades ago and it is becoming an established term in business and management (Koenig, 2012; Lappi, Haapasalo & Aaltonen, 2015). The pioneer in this field – Moore (1993) - believed that successful businesses cannot evolve in a vacuum, they must attract resources of all sorts, including partners, suppliers, customers, in order to create cooperative networks. Moore (1993) suggested business companies to be viewed not as members of a single industry, but as a part of business ecosystem that crosses a variety of industries. Those ideas are even more relevant nowadays, when even practitioners agree that “we are entering an era of enmeshed, ecosystem - based business models, in which businesses must cooperate up and down the value chain to create value” (Ogilvie, 2015). Since, the notion of ecosystem is becoming more and more popular in the business world as it allows taking a different look at business processes. Business ecosystems is analyzed by such authors as Majava *et al.* (2014), Reeves *et al.* (2016), Koenig (2012), Lappi *et al.* (2015), McKelvey (2016) amongst others.

Despite the increasing usage of the term “business ecosystem” it is still considered novel and, according to Majava *et al.* (2014), the literature on it is still immature and mostly focused on software and the information technology industries. A recent increase in scientific literature on business ecosystem in the context of different industries is visible from Table 1. Majava *et al.* (2014) employ the ecosystem approach in the context of life and health sciences, Lappi *et al.* (2015) – in the context of universities. Though, such researches as carried out by Lusch & Nambisan (2015), Kim *et al.* (2010) and Vaz *et al.* (2013) reveal that it is still widely employed in the context of IT related industries (accordingly – digitally enabled services, information technologies (IT) and video games industry). This leads to the belief, that the ecosystem approach could still be applied in many other industries and thus provide a novel approach for industry perception and strategy building.

Reeves *et al.* (2016) name constant evolution as one of the features of ecosystems (applicable for both – business and nature) and state that “the system continually evolves in hard-to-predict ways through a cycle of local interactions, emergence, and feedback” (Reeves *et al.*, 2016). Majava *et al.* (2014) state that business

ecosystems develop through self-organization, emergence and coevolution. McKelvey (2016) emphasizes the high speed of coevolution amongst competitors “at which complexity dynamics, emergence, self-organization, and the creation of new order occur” (McKelvey, 2016). McKelvey (2016) employed complexity theory to explain various complex ingredients entrepreneurs have to cope with that relate to the creation and development of effective startup companies. He puts emphasis on bottom-up emergence aspect of complexity theory stating that “agents restructure themselves continuously, leading to new forms of emergent order consisting of patterns of evolved agent attributes and hierarchical structures displaying both upward and downward causal influences”. According to McKelvey (2016), Kauffman’s “spontaneous order creation” begins when three elements exist: (1) heterogeneous agents; (2) connections among them; and (3) motives to connect. The aim of the research carried out by McKelvey (2016) is compliant with Majava et al (2014), as they both deal with the complex business environment and aim to provide some clarity in how entrepreneurial companies adapt to the complex environment - survive, prosper and grow. The above mentioned authors agree that one of the main features of business ecosystems is capability of constant evolution. Moreover, it is often linked to innovations, namely, considered a source for innovations.

Reeves et al (2016) propose the perception of business ecosystems as complex adaptive systems and state that they are often nested in broader systems. Reeves et al (2016) provide two examples – one from business and one from nature: “a population is a CAS (note: CAS – complex adaptive system) nested in a natural ecosystem, which itself is nested in the broader biological environment. A company is a CAS nested in a business ecosystem, which is nested in the broad societal environment”. Due to this reason, complexity exists at multiple levels, not only in the boundaries of organization. Reeves et al (2016) believe that for business leaders this basically means three things – (1) they need to realize what they are able to predict, control or shape and what is beyond their influence, (2) they must address complexity not only within their firms but also outside, and (3) attempts to control agents at a lower level do not create expected outcomes. In order to help companies foster Reeves et al (2016) focused their research on the intersection of business strategy, biology and complex systems, more precisely, on what makes such systems robust. Reeves et al (2016) business ecosystem approach provides a broader view on the complexity of environment business companies operate in. They aim to help business companies to deal with it by proposing six principles to address the threats and achieve robustness of business complex adaptive systems. Majava et al (2014) state that the main advantage of using business ecosystem based view over others is its ability to “consider the change dynamics and related strategic consequences, which can be very valuable for the ecosystem members”. Perceiving themselves as being a part of the system which on its own is a part of an even bigger system helps business companies, leaders, or individuals by expanding the horizons of the comprehensible operating environment.

Table 1 Business ecosystem

Proposed definition	Authors	Field
Complex adaptive systems” that continuously evolve in hard-to-predict ways.	Reeves, Levin & Ueda (2016)	-
Constellations of companies and other stakeholders, which are tied together through knowledge flows and shared value creation processes.	Majava, Kinnunen, Kess & Leviakangas (2014)	Health and life sciences
A trending model of business collaboration emphasizing organizational diversity, relationship dependency and joint evolution.	Lappi, Haapasalo & Aaltonen (2015)	Universities
Define a service ecosystem as a relatively self-contained, self-adjusting system of mostly loosely coupled social and economic (resource-integrating) actors connected by shared institutional logics and mutual value creation through service exchange.	Lusch & Nambisan (2015)	Digitally enabled services
An economic community involving many companies working together to gain comparative advantages as a result of their symbiotic relationships.	Kim, Lee & Han (2010)	Information technologies (IT)

Source: Prepared by authors

Majava *et al* (2014) state, that in business ecosystems companies develop *mutually beneficial relationships* with customers, suppliers, and competitors. The ecosystem rules result from the coevolution and interactions between the participants. Lappi *et al* (2015) agree by stating that “actors and their relationships are core elements of the business ecosystem concept”. Lappi *et al* (2015) provide a definition of the business ecosystem actors – “all organizations involved – either directly or indirectly – in the ecosystem value cocreation process orchestrated by the central actor”. Actors need a reason for getting involved in the business ecosystem and often mutual benefits become such a reason.

Various scientists proposed ways to approach the complexity related to the business ecosystem definition. Lusch & Nambisan (2015) analyzed the concept of service ecosystem in the context of service innovations. They built a tripartite framework of service innovation based on (1) service ecosystems, (2) service platforms, which enhance the efficiency and effectiveness of service exchange, and (3) value cocreation, which “views value as cocreated by the service offer(er) and the service beneficiary (e.g., customer) through resource integration and indicate the need for mechanisms to support the underlying roles and processes” (Lusch & Nambisan, 2015). The value aspect is also covered by Kapoor & Lee (2013) who argue that firm’s ability to create value from a new technology partly depends on “the accompanying changes by complementors in the ecosystem who may need to undertake new investments and adapt their activities in order for the new technology to be successfully commercialized”. So, the ecosystem should be able to bear *value (co)creation features* in order to succeed.

Lappi *et al* (2015) applied the concepts of stakeholder theory to broaden the understanding of business ecosystem dynamics. Their study contributes to the academic discussion on business ecosystems by identifying the ecosystem actors and their dependencies, using a three-step stakeholder assessment process. As presented in their study, one of the possible ways to approach the complexity related to the ecosystem definition task is to model the ecosystem actors and their relationships as a stakeholder network, in which the interests of all stakeholders are combined and satisfied. Lappi *et al* (2015) state that “business ecosystem’s actors feed the achieved benefits back to the business ecosystem through the stakeholder network”. This leads to the possibility of characterizing business ecosystems *as closed or open* depending on what part of achieved benefits is fed back to the ecosystem.

Based on the definitions proposed in the scientific literature (see table 1) and the further literature analysis on the features of business ecosystems, the authors of this paper employ such a definition of business ecosystem: *business ecosystem is an either closed or open constantly evolving system of actors working together due to existing mutually beneficial relationships. The features of such systems also include crossing a variety of industries and being nested in bigger systems.*

2 Crowdfunding as a nested system

In the latter part of the paper it is aimed to propose a view of crowdfunding as an ecosystem on the basis of the nested systems view proposed by Reeves *et al* (2016) and the key findings on business ecosystems outlined by Majava *et al* (2014). Also, the insights of Lusch & Nambisan (2015) and McKelvey (2016) are adapted for the application of the ecosystem logics on crowdfunding.

Crowdfunding is a method to establish connection between the business (entrepreneurs), who seek to raise capital, and backers (investors), who are ordinary people willing to back with (or invest) small amounts of money through internet-based intermediaries (Mollick, 2014; Ahlers, Cumming, Gunther & Schweizer, 2015; Bowman, 2015). It can be drawn from the definition that the main actors in the case of crowdfunding are: the crowdfunding platform (intermediary), backers (investors) and entrepreneurs (startups). As Beugre & Das (2013) state, entrepreneurs (or businesses, startups) are those, who make an open call for funding and promise monetary or non-monetary return for backers (investors). According to Valančienė & Jegelevičiūtė (2014), investors (backers) are “the members of crowdfunding community who decide to commit their financial resources to the project”. The intermediaries (crowdfunding platforms) could be viewed as service platforms. As stated by Lusch & Nambisan (2015), a service platform is „a modular structure that comprises tangible and intangible components (resources) and facilitates the interaction of actors and resources (or resource bundles)”. Crowdfunding platforms more than comply with such definition – they are „places” for backers (investors) and businesses (startups) to meet and interact, to exchange tangible and intangible resources. According to Lusch & Nambisan (2015), such service platforms have a benefit of leveraging resource liquefaction and enhancing resource density, so platforms serve as actors in day-to-day service exchanges. Reeves *et al* (2016) propose three-level nested systems logic and suggest the way it is applied both in nature and in business (see Table 2). In the opinion of the authors of this paper, an analogical view could also be applied on crowdfunding. In the case of crowdfunding, the platform (intermediary), backers (investors) and entrepreneurs (startups) would be included in the first level (Figure 1).

Table 2 Application of the three-level nested system logics on crowdfunding

Level	Nature	Business	Crowdfunding
First	The population: individual organisms of the same species	The company: individual employees	<i>The crowdfunding platform with its backers (investors) and entrepreneurs (businesses)</i>

Second	The natural ecosystem: populations of species that depend on and compete with one another	The business ecosystem: companies that depend on and compete with each other	<i>Other crowdfunding platforms (incl. different crowdfunding models)</i> <i>Different backing (investing) possibilities</i> <i>Different ways to get financing</i>
Third	The broader natural environment: neighboring ecosystems and nonbiological elements, such as the climate	The business environment: overlapping ecosystems and other stakeholders, such as ngos, government entities, and civil society	<i>The entrepreneurship environment: government, community (society), organizations for fostering entrepreneurship, research institutions</i>

Source: extended by the authors (crowdfunding column) on the basis of Reeves *et al* (2016)

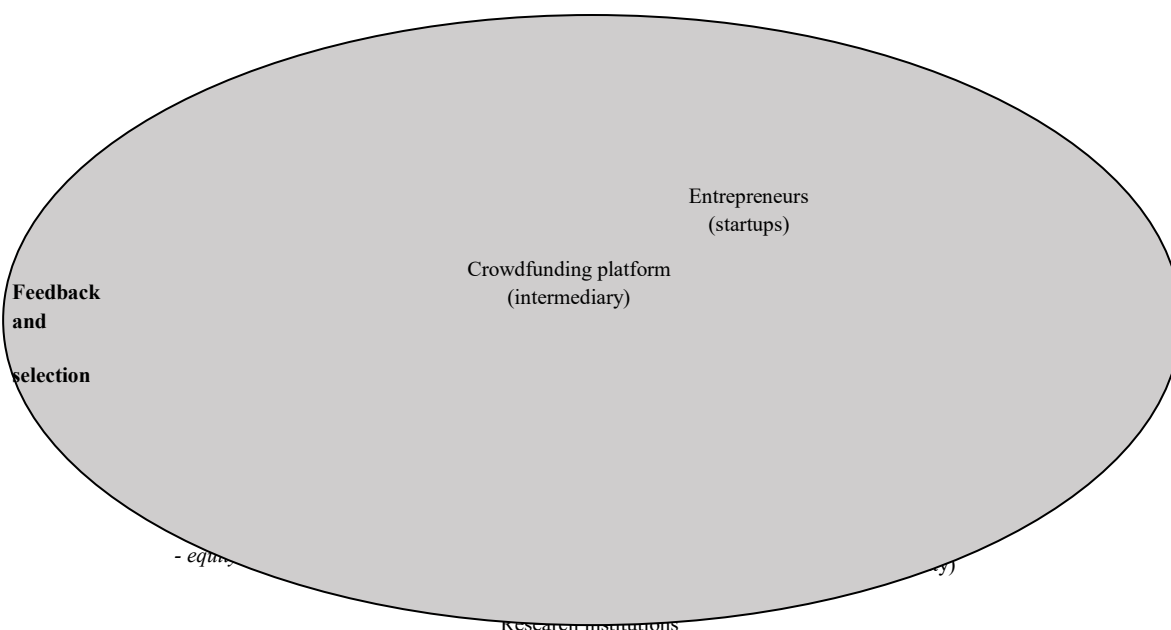


Figure 1 Crowdfunding as a nested system (prepared by the authors on the basis of Reeves *et al* (2016))

The second level consists of other crowdfunding platforms, including platforms working under different crowdfunding models (donation-based, rewards-based, loan-based, or equity-based), organizations with different propositions for backers (investors) on where to use their money (banks, charities, etc.) and other financing opportunities (venture capital funds, business angels, banks, and etc.). This is the broader view, where competitors are included. Though, in the case of crowdfunding it is not always true to use the term of competitors, because it is believed that crowdfunding platforms are often employed by those entrepreneurs (startups), who are not able to raise capital using other options due to an extremely brave idea or newly established business. So, the other financing opportunities are impossible for them. Moreover, some authors believe that categories of businesses which tend to use crowdfunding and other financing options, such as venture capital or angel investors, do not overlap (Shirky, 2012). Still, in the opinion of the authors of this paper, it could only be determined separately in each case, so in order to maintain a broader view on crowdfunding, we believe it is important to keep these options in mind and eliminate them only when applying the system for a specific case.

The third level consists of the government, which acts as an enabler by creating a favorable environment for the phenomenon (legal acts, promotion), organizations fostering entrepreneurship, research institutions and society (community), which is a source for backers (investors) and entrepreneurs (startups). The parties involved in the third level are not directly involved in the process of crowdfunding, but rather contribute to creating the environment for it.

3 The ecosystem of crowdfunding and value-based links

Majava *et al* (2014) propose to describe not only the structural elements of an ecosystem, but to also include resources, drivers and barriers. In the case of crowdfunding it is also crucial to consider these aspects. In order to do so, the logic of Majava *et al* (2014) is employed. In this paper, the ecosystem of crowdfunding is perceived as

a constantly evolving system of **structural elements** working together due to existing **mutually beneficial relationships in the context of complex business environment**. Table 3 provides the list of structural elements involved in crowdfunding, lists the value-based links between these structural elements, and outlines the main environment based factors influencing the evolution of crowdfunding. The **structural elements** are discussed in the previous part of the paper. The **value-based links** between these elements are depicted in Figure 2. In the first level, entrepreneurs (startups) propose novel ideas, projects (a) to appear on crowdfunding platform. This way, investment or backing possibility (b) is created for backers (investors), who appoint their funds (c) for favorable ideas or projects. They are also occasionally enabled to provide advice (d). Moreover, they form a basis for testing marketability (j) of a product or service. In return, backers (investors) receive rewards or monetary returns (e) (depending on the chosen crowdfunding model). Entrepreneurs (startups) usually are entitled to pay fees (f) for crowdfunding platforms (intermediaries). These value flows are previously discussed by Valančienė & Jegelevičiūtė (2014), though, not in the context of ecosystems. In the context of crowdfunding ecosystem, there arises a need to include value flows not only between the lead actors, but also between the lead actors and other structural elements such as society (community), government, possible competitors and others named in Table 3.

Table 3 The ecosystem of crowdfunding: structural elements, value-based links and environment factors

<i>Structural elements of the crowdfunding ecosystem</i>	
Lead actors: backers (investors) and entrepreneurs (startups), intermediaries (crowdfunding platforms);	
Niche players: advising platforms; banking solutions (e.g. PayPal)	
Possible competitors: banks, charities, business angels, venture capital funds, and etc.	
Society (community)	
Government	
Organizations fostering entrepreneurship	
Research institutions	
<hr/>	
<i>Value-based links between the structural elements</i>	
(a) Ideas, projects	(h) Welfare
(b) Investment or backing possibilities	(i) Job creation
(c) Funds	(j) Testing marketability
(d) Advice	(k) Knowledge about crowdfunding
(e) Rewards or returns	(l) New products and services
(f) Fees	(m) Decision right
(g) Legal environment	
<hr/>	
<i>Environment</i>	<i>Drivers</i>
<i>Enablers</i>	• Coevolution
Science	• The rise of IT
• Adequate research activities	
Culture	<i>Barriers</i>
• Social norms	• Fear for fraud
• Trust	• Differences in legal base
• Entrepreneurial culture	• Intellectual property rights issue
Government support	
• Favorable legal base	
• Research funding	
Organizations fostering entrepreneurship	
• Promotion activities	

Source: prepared by authors on the basis of Majava *et al* (2014)

Government is responsible for the creation of (favorable or unfavorable) legal environment (g) for crowdfunding as well as for other funding (or backing, investing) possibilities. Moreover, government is also responsible for the distribution of economic benefits generated by crowdfunding, what includes creating welfare (h) for society. Successful entrepreneurs (startups) not only provide new products and services (l) for society, but also create jobs (i). Moreover, the existence of crowdfunding platforms as such provides society (community) a decision right (m) on what ideas are worth becoming a reality. Research institutions and organizations for fostering entrepreneurship create knowledge about crowdfunding and disseminate (k) it among interested parties. Structural elements belongings to 3rd and 2nd level create environment for lower levels to emerge in.

The *environment* could be *characterized by enablers, drivers and barriers* for crowdfunding. The *enablers* are linked to the 3rd level structural elements. Research institutions are responsible for science and adequate research activities on crowdfunding. Culture is embedded in the society (community) and includes social norms, trust and entrepreneurial culture. Government is responsible for supporting crowdfunding through the creation of favorable legal base and substantial funding to enable research institutions and organizations fostering entrepreneurship. It can also be retrieved from Figure 2.

The *main drivers* include coevolution and the rise of information technologies. Coevolution is explained by McKelvey (2016) in the context of entrepreneurship: “a change in one part of a product leads to a change in another part, which then leads to further change in the part showing the initial change; these changes could affect marketing, production, supply chains, and so on. Finally, it could happen that an entirely new product appears”. In the opinion of the authors of this paper, it is not only applicable to products, the same applies for projects, ideas, and even such objects as ecosystems - a change in one part of ecosystem leads to changes in other parts.

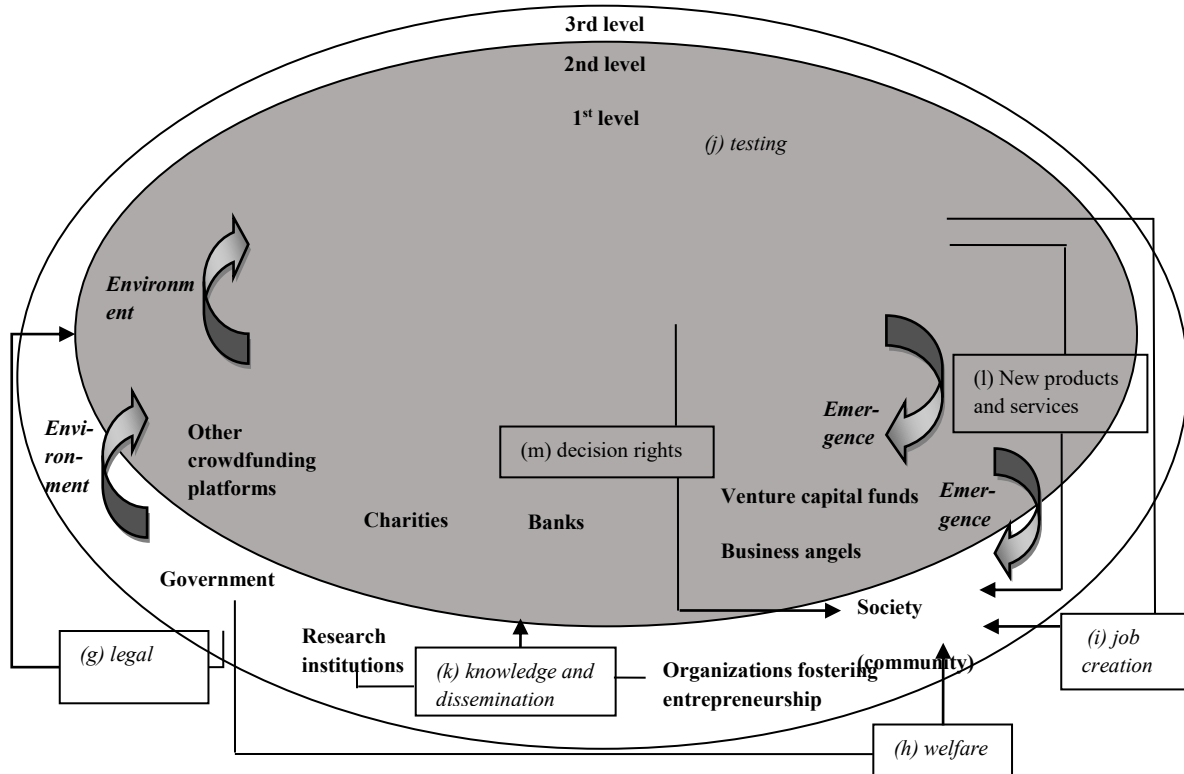


Figure 2 The ecosystem of crowdfunding (prepared by the authors on the basis of Reeves *et al* (2016) and Valančienė & Jegelevičiūtė (2014)).

Lusch & Nambisan (2015) analyze the role of IT in the context of service innovation and claim that IT provides dual roles – „as an operand resource (facilitator or enabler) and as an operant resource (initiator or actor)—in service innovation“. In the context of crowdfunding ecosystem the role of IT is also dual: (1) it is an enabler for the platforms to operate and improve, and, on the other hand, (2) globalization together with the rise of information technologies was a prerequisite for crowdfunding, because this is a way to find a substantial amount of people from all around the world to put their resources (back or invest) in brave ideas or projects. As Lusch & Nambisan (2015) conclude, IT enables not only the establishment of a value network but also sharing and integrating resources and knowledge in that network.

The *barriers* for crowdfunding are extracted from the scientific literature on crowdfunding. The threat of fraud related to crowdfunding is analyzed by such authors as James (2013), Yamen & Bartholomew (2015), though it is also recognized by government institutions (such as SEC in the USA) and means are prepared to avoid it. Differences in legal base result from the novelty of the phenomenon – there is no one proven way to empower it. Differences between the USA and Italy are analyzed by Bowman (2015), between the USA, the United Kingdom, Italy, France and other countries – by Weinstein (2013). Intellectual property rights issue gains importance in case products or services are cocreated together with backers (investors). The importance of the question is emphasized by Postolski & Nawatarski (2013), who present lessons from the first patent infringement lawsuit filed against a crowdfunding project on a crowdfunding portal.

Conclusion

The research provides a theoretical view on crowdfunding ecosystem with an emphasis on the value based links. The crowdfunding ecosystem is defined as a constantly evolving system of structural elements working together due to existing mutually beneficial relationships in the context of complex business environment.

Consequently, the three elements of crowdfunding ecosystem are analyzed: structural elements, mutually beneficial relationships, and environment. The proposed crowdfunding ecosystem view is presented in both table format and a mapped picture. Such view of crowdfunding ecosystem is an important tool for anybody to broaden the perception of crowdfunding phenomenon in the context of complex environment.

As this is a theoretical research, limitations apply in case of adapting it for a certain country or a specific industry. The structural elements and value-based links should be reconsidered and adjusted. The view of crowdfunding ecosystem could serve as a basis for future empirical research. Relevant research questions for future study purposes include: Do characteristics of structural elements differ in various regions, and, if yes, how? How do global crowdfunding ecosystems adapt and use local settings? What are the most significant barriers in the development of crowdfunding ecosystem and how to address them? Also, the value-based links should be verified through empirical research.

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*IFRS TRANSLATOR COMPETENCE PROFILE IN THE LIGHT OF THE
COGNITIVE-COMMUNICATIVE THEORY OF TRANSLATION*

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Abstract

Purpose of the article In the accounting literature, a lot was said about the problems with translation of International Financial Reporting Standards and the bad quality of national translations in many countries. This is due to the lack of theoretical framework for the IFRS translation process based on the grounds of general translation theories. The aim of this paper is to propose a theoretical framework for IFRS translation (a translator competence profile, above all) on the grounds of the cognitive-communicative theory of translation, which can be put into practice to ensure the high quality of IFRS translations.

Methodology/methods The paper is theoretical one. The basic methodology was studies of Polish literature in the field of translation theory. The author has analysed the so called cognitive communicative theory of translation developed by a Polish linguist, professor Krzysztof Hejwowski as well as corresponding views of other Polish researchers concerned with translation theory and practice. On this basis he developed a prescriptive model of competence of the IFRS translator.

Scientific aim The prescriptive model of translator competence presented in the paper can contribute to the development, on the basis of translation theories, of a universal framework for IFRS translation.

Findings Applying the translation model proposed by Hejwowski to the IFRS the author has developed a competence profile of the IFRS translator into Polish. Two levels of competence are distinguished in this model: primary (of key importance) and secondary (additional, supporting). Additionally, two competence areas – knowledge and predispositions – have been distinguished.

Conclusion The guidelines and recommendations can be useful for institutions and organisations responsible for official translations of the IFRS

Keywords: International Financial Reporting Standards, translation, equivalence, theory of translation, cognitive-communicative theory of translation, competences of translator

JEL Classification: M41

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Introduction

In recent years, the question of translating International Financial Reporting Standards (IFRS) has attracted considerable interest of accounting scholars. This issue was addressed by, among others, Rutherford (1983), Parker (1989), Zeff (1990), Nobes (1993), Alexander (1993), Evans and Nobes (1996), Aisbitt and Nobes (2001), Doupnik and Richter (2003), Kosmala-MacLulich (2003; 2005), Tsakumis (2007), Tsakumis, Campbell and Doupnik (2009), Dahlgren and Nilsson (2009), Hellmann, Perera and Patel (2010a, 2010b), and Baskerville and Evans (2011) (some of these papers are discussed in the next section). Generally, all these authors are concerned with identifying problems in translation and the sources of these problems, but they do not propose any recipes for overcoming the difficulties encountered in the translation process. What mean is not advice dictated by common sense (which is offered by some of the scholars mentioned above), but formulas that would refer to translation theory. The present paper aims to fill this gap. It presents a cognitive-communicative theory of translation, devised by a Polish linguist, prof. Krzysztof Hejwowski, and applies it to translating IFRS, which leads to formulating guidelines for a good quality translation of IFRS. The author has analysed the cognitive-communicative theory as well as corresponding views of other Polish researchers concerned with translation theory and practice, and on this basis developed a prescriptive model of competence of the IFRS translator. He has also formulated certain recommendations regarding the translation process.

It should be stressed that both Hejwowski's theory and the directions concerning IFRS translation formulated in this article have a universal character and are not limited to the Polish language or the group of Slavic languages. Thus, wherever in the text there is a reference to the Polish language, the same applies to Czech, Slovak, German or any other language.

Review of the foreign literature on IFRS translation⁴²

Certain authors treated the issue of translation in accounting from a very general perspective, without referring to the International Financial Reporting Standards (IFRS). Their conclusions are interesting as they say a lot about the nature of translation itself, regardless of the text and the field. Arche and McLeay claimed that the lack of the possibility of providing an equivalent translation for accounting terms results not only from the lack of meaning equivalency, but also from certain linguistic habits (Baskerville and Evans, 2011, pp. 11–12). According to Evans, problems with translation should be considered from the perspective of the Sapir–Whorf hypothesis, according to which people using different languages perceive the world differently (Baskerville and Evans, 2011, pp. 11–12).

From the point of view of the aim of this article, the survey conducted by Baskerville and Evans (2011, pp. 15–52) is of special interest. It was addressed to authors and translators of manuals in the field of financial reporting who mostly used the original text of the IFRS. The authors obtained 67 answers. Respondents were from the countries of the European Economic Area (European Union plus Norway and Iceland) and EU candidate countries (Turkey and the countries of the former Yugoslavia). The vast majority had professional experience in accounting. As for language skills, a vast majority of the respondents considered themselves to be bilingual, and 15% to be multilingual. Baskerville and Evans determined five possible areas of difficulty in IFRS translation, including:

- a) terms referring to probability and uncertainty,
- b) the complexity of the syntax and the length of sentences,
- c) terms with broader meaning than in the common language,
- d) terms meaning other concepts or having multiple meanings,
- e) concepts that are not defined or impossible to define.

For each of these areas, Baskerville and Evans provided several examples (fragments of the original IFRS text) and asked the respondents whether the translation was problematic. Translation of terms referring to uncertainty and probability (*undue, ordinarily, reasonable, probability, improbable*) was problematic for 37% of the respondents (for 59%, it was not problematic at all or only slightly problematic; 4% had no opinion). For 40% of the respondents, the syntax and the length of sentences posed a problem. Over half of the respondents had no problems or no big problems with it. Few translators (12%) had much difficulty translating terms with broader meaning than in the common language (*entity, prudence, material*). Even fewer respondents (5%)

⁴² Only those studies on IFRS translation that are deemed most important shall be presented in this article.

considered translation of the words *interest* and *stocks* as a serious problem, despite them having more than one meaning.

Over half of the respondents felt that it was problematic for them to translate terms that are not defined or impossible to define such as *substance over form* and *presenting fairly* (including 40% of the respondents who thought that it was very problematic).

In the next part of the survey, Baskerville and Evans identified thirteen 'translator's nightmares', including: the technical complexity of the IFRS, the technical complexity of some standards, discrepancies in the concept of accountancy between the IFRS and national accounting standards, discrepancies in the accounting practice between the IFRS and the national accounting standards, retaining correlation with the grammar and the syntax of the original English IFRS, the grammar and the lexicon of the English language (as such), the possibility of translating the same English word in many ways, synonyms and near synonyms, differences between modal verbs (*may, might, should, could, must*), limited use of inflection in the English language, lack of male-female versions of nouns, and the subtleties related to the use of English tenses. Each suggested option was indicated as the source of difficulties by at least four respondents. Moreover, a majority of the elements identified by the authors were considered as nightmares by most of the respondents, even though none of them obtained a particularly high number of votes. The respondents also enumerated 10 other causes of translation difficulties, including the *belles-lettres* style of the IFRS (contrasted with the precise and economical form of the legal language) and problems with punctuation. Baskerville and Evans analysed the answers broken down by language groups. From the point of view of the Polish language, the conclusions concerning the Balto-Slavic languages are most interesting. The main problems for translators from countries of this language groups included: maintaining consistency with the grammar and the syntax of the English-language version and the stylistic lengthiness in the original text.

In the conclusions to the survey, the authors identified four basic difficulty areas in translating IFRS from the English language:

- 1 Lack of equivalent terminology. It results from the fact that terminology in the area of accounting is a part of the language used in accountancy by a specific community. For example, the term *prudence* in the IFRS does not correspond to the Italian concept of *prudenza*. In the Finnish tradition of accountancy, there is no concept that would correspond to *materiality*. In general, the situation is not improved by the existence of words that can be considered near equivalents since they can be interpreted in various ways. The respondents provided examples of such terms as *entity* and *material* and the expression *present fairly*. Another source of difficulties is that the English language is richer than many other languages in terms of vocabulary. In such a situation, a literal translation will have a broader meaning than the original term. Translators also experience problems with the so-called false friends, i.e. pairs of identical or same-sounding words in two different languages that have different (sometimes even opposite) meanings. The best example here is the English word *material*, whose correspondents can be found in most other languages, but their basic meaning is different than in the English IFRS (in French, Swedish and also Polish, it means 'physical' or 'tangible').
- 2 The syntax and the grammar of the English language. When translated to other languages, English sentences often turn out to be longer and more complex, which makes them lose a part of their meaning. This problem was particularly emphasised by Romanians, Italians and Hungarians. However, it is present in nearly all languages. Some translators cope with this problem by dividing one long sentence into several shorter ones.
- 3 The legal form of the IFRS. The Anglo-Saxon accounting standards, based on the Common law system, do not correspond to the Roman legal tradition of the Continental Europe. For translators from those countries, the basic problem is the *belles-lettres* style of the IFRS, devoid of the precision typical of Civil law countries. Moreover, the meaning of certain terms in Anglo-Saxon countries is different than in the countries with the Civil law system.
- 4 Cultural differences. The understanding of many concepts is culturally conditioned (e.g. *prudence, reasonable, material*). Their translation can be distorted due to the influence of the national culture and way of thinking. Instead of a literal translation, it is necessary to take into consideration the essence (the roots) of a given concept.

According to Baskerville and Evans, the answers provided by the surveyed translators confirm the opinions presented in the literature and the theory of translation on the impossibility to achieve full equivalency of meanings between a translation and the original. These results, among other factors, stem from the fact that accounting terminology is culturally determined.

Hellmann, Perera and Patel (2010a, 2010b) examined the quality of IFRS translations based on the German example (referring to the concept of equivalence). They found that correct translation of concepts that require professional judgement is particularly important. It is difficult in a situation in which there are no words in a given language that could reflect the essence of a given concept or in which literal translation runs the risk of giving the text another meaning. Some basic concepts cannot be literally translated into German. For example, the correspondent of the English term *asset* (in Polish, translated as *składnik aktywów*) is the German term *Vermögensgegenstand*. However, the essential part of *Vermögensgegenstand* is not the control of future economic benefits resulting from past events (as in IFRS), but the ability to meet obligations and exercise independent use. Consequently, it turns out that the meaning of the term *asset* is broader than that of *Vermögensgegenstand*. For this reason, a new term was used in the translation, which was not present in the German law up to then, namely *Vermögenswert*. Hellmann, Perera and Patel also give examples of obvious mistakes in translations, which have practical significance (e.g. they change the scope of the standard or influence the manner of recognising a transaction). Summarising, they claim that the German translation of IFRS is a rather simple one, prepared without in-depth and comprehensive linguistic analysis.⁴³

Based on their own study, Douppnik and Richter (2003) established that Germans interpret the term *probable* more conservatively than Americans when determining the fulfilment or not of the criteria for recognition of a loss related to a construction agreement. The threshold level for German respondents was 66%, while for the Americans – 74%. As a result, Germans adopt a more conservative approach when applying IAS 11 (with respect to the recognition of losses related to construction agreements). This is undoubtedly related to the specificity of the German culture.

A similar issue was analysed by Tsakumis (2007). In his research, he examined the differences in the approach to recognition of contingent assets and contingent liabilities between Greeks and Americans based on the same general rules of IAS 37 (*Provisions, Contingent Liabilities and Contingent Assets*). It turned out that, in the same situation of court proceedings, contingent assets would be recognised by one in three American accountants and by two in three Greek accountants. The latter were also less conservative as regards the recognition of contingent liabilities. Other studies showed that Brazilian accountants were less inclined to reveal contingent liabilities and assets than Americans, and that Frenchmen and Germans assessed warranty liabilities with more prudence than American accountants (Tsakumis, Campbell and Douppnik, 2009). Those conclusions first of all evidence the considerable influence of cultural differences on the judgements of professional accountants, but is also relevant from the point of view of translating the IFRS into various languages.

Douppnik and Richter also examined the manner in which German accountants proficient in English understand expressions referring to probability in the original and in the translation. It turned out that, in the case of some terms, the original and the translation were interpreted differently. As a particularly difficult example, Tsakumis, Campbell and Douppnik (2009) give the word *remote*.⁴⁴ According to Webster's dictionary, it has five meanings, including four referring to distance in time and space and one to probability (*remote* as 'unlikely'). In the IFRS, this word is used in the last meaning. While translating the word *remote* into Spanish, Italian or Portuguese is not problematic, it is hard to find its correspondent in French. The French translator decided to use a word that reflects the meaning of the original term, but is not its direct translation. Even more problems are encountered at an attempt to translate the word *remote* into German. It is possible that a German accountant recognises the same event differently based on the original IFRS and the translation.

Dahlgren and Nilsson (2009) presented a list of selected problems related to translating the IFRS to Swedish. For example, in the Swedish accounting terminology, there is no concept corresponding to the English *income* (covering both *revenue* and *gains*). Translating the word *comprehensive* is also problematic (as in *comprehensive income*).

The negative influence of translation on the quality of the process of using the IFRS is best evidenced by the titles of two publications issued on this topic: *Lost in Translation* (Baskerville and Evans, 2011) and *Destroying Content while Changing Context* (Dahlgren and Nilsson, 2009). The opinions expressed in those publications coincide with the meaning of the Italian epigram *traduttore traditore* ('translator traitor'), which expresses the unpleasant conclusion that thoughts expressed in one language cannot be precisely re-created in another. However, in the case of IFRS, being 'lost in translation' is only partly due to objective causes. In my opinion, to a large extent, it is the result—unfortunately (or maybe fortunately since it can be remedied)—of the improper translation process.

⁴³ In my opinion, the same can be said about the Polish translation of the IFRS. A justification of this thesis can be found in Kabalski (2012, chapter 5).

⁴⁴ Tsakumis, Campbell and Douppnik, 2009.

According to Baskerville and Evans (2011), the conclusions and recommendations for translation of accounting texts that come from practical experiences and theoretical considerations presented in the literature with respect to other fields are the following:

- a) the causes of translation difficulties are mostly attributable to the cultural differences and an relatively small number of strict definitions of concepts (these are the common features of social sciences as contracted with nature and exact sciences); translators and institutions responsible for translation quality and education of translators should be aware of those facts,
- b) achieving full equivalence of translation is impossible; one should rather strive for the best possible level of equivalence, which is very difficult and time consuming,
- c) in order to ensure the highest possible equivalency, various methods should be used, including most importantly the functional approach and group translations, centralised process of translation proofreading, back translation (translation of a text back from the target language into the original language) and others,
- d) the translator should not only be proficient in both languages, but also possess specialist knowledge of accounting, know the culture of both countries and should have good writing skills,
- e) translators of accounting texts can use the experiences related to legal translations due to similarities between both fields (cultural determinants, lack of equivalency of terms and concepts, similarity between accounting and legal systems).

As it has been mentioned in the introduction, recommendations such as those presented above are formulated based on common sense (and obviously on knowledge of the IFRS), but do not take into account translation sciences.

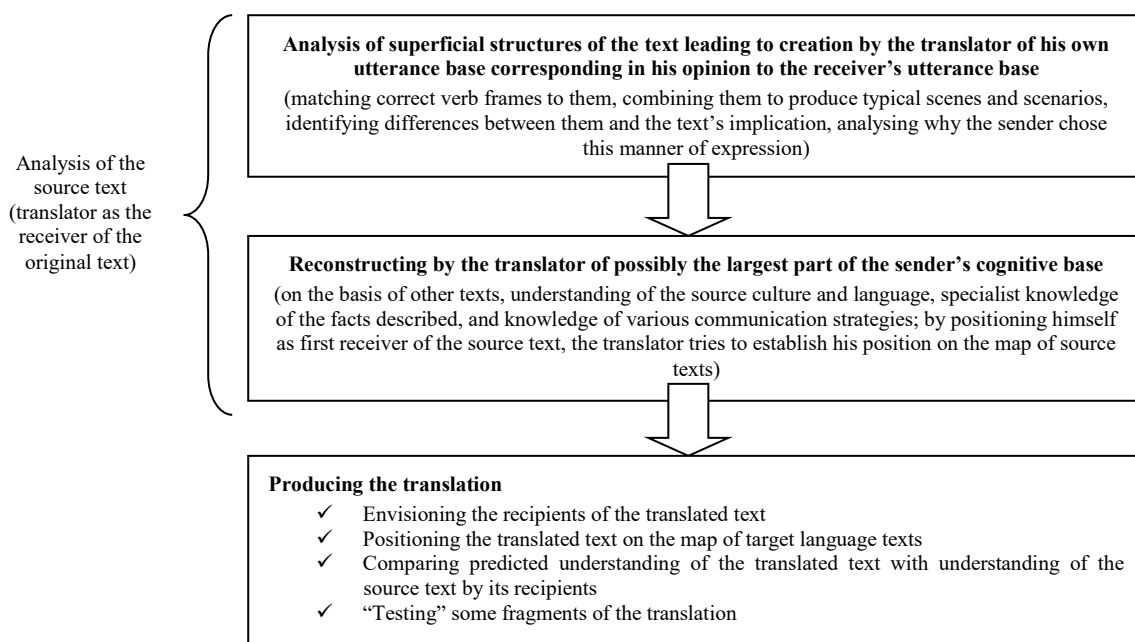
Krzysztof Hejwowski's cognitive-communicative theory of translation

Krzysztof Hejwowski (a Polish linguist from Warsaw University) believes that only the cognitive-communicative theory of translation is able to take full account of the complexity of this process. Hejwowski (2006) argues that classic approaches to translation, i.e. the structural and the functional approach, cannot be regarded as translation theories because they view translation as an operation on the text, and do not take into account the complex mental operations which constitute the nature of the translation process. The translation model proposed by Hejwowski draws on various translation and communication concepts described by psychologists, linguists and psycholinguists⁴⁵.

Hejwowski's theory is based on the assumption that translation is an operation on four minds: the translator's own (real) mind and the virtual minds modelled by the translator – the mind of the author of the text, the mind of the model receiver of the text and the mind of the target reader of the translated text. This theory also holds that in producing and understanding texts specific structures organizing human memory are employed. Lexical units and syntagms (i.e. word sequences) memorised and directly related to the text represent the lowest level of these structures. Higher order structures are verb frames (i.e. detailed schemata, on the basis of which we perceive the reality, organized around verbs), scenes (i.e. thematically or functionally organized sets of states, events and relations) and scenarios (sequences of events). Communication between people is based on two principles: selection and deduction. In the selection phase, the sender of the communication first selects from the whole a so called cognitive base (comprising his goals, opinions and feelings, the representation of the situation of the receiver and of himself, and various images and emotions), those elements which he wants to transmit to the receiver (who is expected to recreate them). The chosen elements form the utterance base, which, in ideal conditions, should ensure achievement by the sender of the desired effect of the communication. However, it still is too broad (inclusive) and embraces so many structures incapable of being verbalized that it does not constitute the content that can be expressed by words. Therefore, further selection is necessary. In the next step, the sender selects such a fragment of the utterance base which he believes best represents the whole (which will cause the receiver reconstruct that whole, excluding the elements that the sender does not want to reveal). The effect of the second selection is the so called deep structure of the utterance. Before it finally gets verbalized, the sender makes sure that it can be verbalized and will achieve the desired effect. If he decides that it is so, the linguistic realization of the deep structure takes place and the receiver is confronted with the text.

⁴⁵ Hejwowski's book about the cognitive-communicative theory has never been published in English. A short review of the book can be found on http://www.plc.psychologia.pl/plc/plc/contents/fulltext/10-1_6.pdf.

In this approach, the creation of the utterance is a probabilistic process (i.e. it consists of a definite sequence of steps and is based on the sender's predicting how the utterance will be reconstructed by the receiver). The role of the translator in thus the understood communication process is presented in Figure 1.



Source: Author's elaboration based on: Hejwowski 2006, 55–57.

Figure 1 The role of the translator in the communication process in Hejwowski's theory of translation

Summing up the complex role of the translator, Hejwowski wrote: "This is why translation is such a difficult task." The process of translating is based on hypotheses and suppositions. The translator must first understand correctly the intended message of the source text (at the level of the deep structure of the utterance). His task is to produce a text that will be interpreted by its target readers in a way possibly closest to the interpretation of the readers of the source text, as this is the essence of translation equivalence. From the viewpoint of the cognitive-communicative theory of translation, the principal elements of the translator's competence include not only good a command of languages, but also good communication skills, which allow him to empathise with others and find the intended sense of the utterances.

Hejwowski believes that the elements of the translation process that he identified using the cognitive-communicative approach are present in the majority of professional translations, although some of them may be less important or complex in the case of specialist texts, which usually do not require predicting the psychological predispositions of the target recipients of the translation or a complex process of positioning the text on the map of target language texts. The translator knows that the recipients will be specialists in a given area, with a definite level of knowledge and experience, etc.

Guidelines deriving from the cognitive-communicative theory for translating IFRS

Based on conclusions drawn from Hejwowski's theory and the concepts of other Polish scholars engaged in translation studies, I will formulate my own criteria and instructions for good IFRS translations, mostly relating to the translator's competence profile. I will also offer some general guidance on the translation process.

The translator of IFRS into Polish should have sufficient knowledge of both the relevant disciplines and the languages (English and Polish). However, it is not easy to find a native speaker of Polish who has a sufficiently good command of English and thorough knowledge of accounting and related disciplines. It is true that today every good specialist in accounting (both academic and practitioner) can communicate in English, but this does not mean that each will automatically be a good translator. I will repeat after Hejwowski (2006, p. 157) that "knowledge of a language cannot be equated with the ability to communicate in this language, because efficient communication is possible even with a limited stock of means of linguistic expression." Linguistic competence level, according to Hejwowski, should indeed be very high. What linguistic background should a good translator have? Hejwowski (2006, pp. 152–153) and many other authors believe that completed translation studies are a

necessary element. Regular philological studies supplemented by a specialist translation course are not enough. A translator's education should be based on three pillars (see Kubacki, 2008, pp. 85-97):

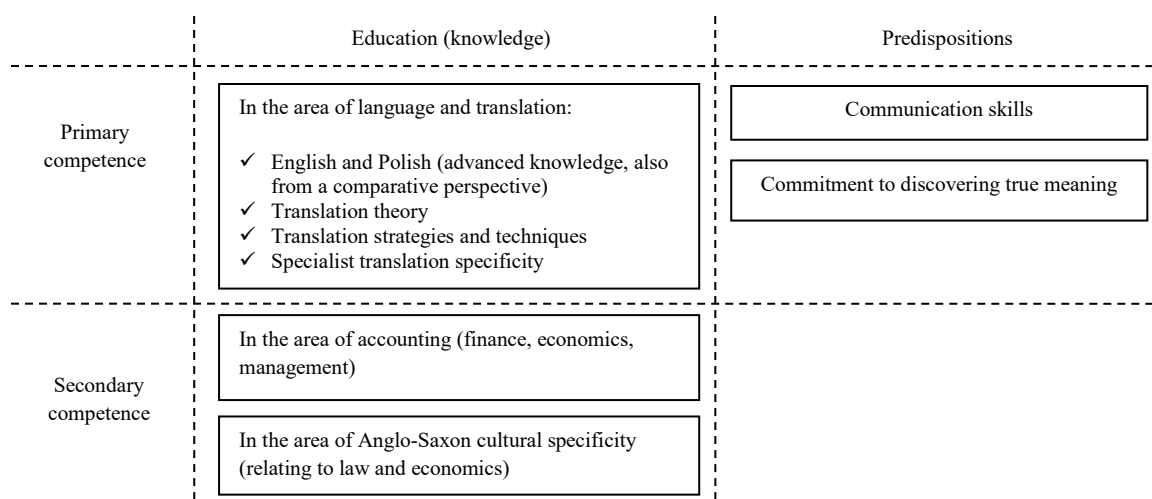
- a) a theoretical component (translation history, translation theory, contrastive linguistics),
- b) practical exercises, which are a condition sine qua non of the success of the study programme,
- c) grammar and stylistics of Polish ("intuitive knowledge of one's native language is not enough and (...) should be supported by study devoted to language correctness and precision. Translation studies cannot be aimed solely at developing fluency in a foreign language, but they must also improve proficiency in Polish").

Producing a good translation requires extensive and profound knowledge.

Is it also indispensable for a good translator to possess specialist knowledge of accounting? In Hejwowski's opinion regarding the translator's competence, it is not essential. Anyway, finding someone so thoroughly educated in these two areas would be very difficult, if not impossible. Pieńkos (1999, p. 283), too, believes that a good translator is not a specialised translator, but someone qualified and skilled, who will further improve his proficiency in a specific area (like a doctor who has received a general medical education). He argues that "there are few texts with very high specialisation levels. The majority of texts intended for translation deal with many areas of science and technology at the same time, so a high degree of specialisation in one area hinders effective translation work." A solid, comprehensive education in the field of translation guarantees two other qualities essential to good translation work: knowledge of the theory of translation and awareness of the pitfalls involved in this process. It also helps realize the importance of choosing appropriate translation strategies and techniques.

Another author dealing with translation matters, Kubacki (2008), provides examples of problems with terminological equivalents in translating accounting texts from German into Polish (and vice versa), and argues that "adequate translation is not possible without at least some knowledge of the subject." The choice of language equivalents must be guided by the denotative knowledge of the translator rather than dictionaries alone.

I am convinced that for a high-quality translation of IFRS into Polish, very important, besides extensive knowledge (linguistic first of all), are also "soft" elements of the translator's competence, indicated by Hejwowski: the inquisitiveness necessary to correctly understand the intended meaning, and communication skills. The first element is vital for the factual correspondence between the original and the translated text, and the second one, for the comprehensibility of the text. Comprehensibility of the translation is very important, because an accessible form will facilitate the understanding of the complex content of the standards. The competence of a potential translator of IFRS can be tested by giving him a section of the text for trial translation. On the basis of the literature of the subject, I have compiled the ideal competence profile of the IFRS translator into Polish (see Figure 2)



Source: author's elaboration

Figure 2 Model competence profile of the IFRS translator into Polish

To complement the content of the figure presented above, it should be added that the translator (lacking sufficient specialist knowledge) should be supported by an expert/experts in accounting and related disciplines, well acquainted with both Polish and international accounting, and in particular with the Anglo-Saxon model. The requirement of diligence and reliability is so obvious that it has not been included in the figure.

As regards the process of translation, there also are certain rules which should be observed. First of all, translation must have a clearly defined goal in the setting of the elements: the sender (his role), the sender's intention, the receiver (his expectations), the means of conveying information, time, place and circumstances. The goal of IFRS translation has largely been defined by the IASC, which emphasizes the need for a rigorous translation process so as to secure maximum correctness of the produced text. It mainly refers to factual correctness, resulting in an equivalent interpretation of IFRS in the different countries, which ensures comparability, at the international level, of the principles of financial statements' preparation and of the statements themselves (the constitutive goal of the IASC Foundation).

The objective of the IFRS translation into Polish cannot be the national version of the standards adapted (contrary to the explicitly expressed or implied intentions of their authors) to the views, routines and capabilities of the Polish accounting community.

Finally, it should be added that the number of translators engaged in the IFRS translation process affects the quality of the outcome (the more of them, the worse it will be, which was the case with the IFRS translation into Polish). In my opinion, it is best to engage only one qualified, professional translator, who:

- a) possesses some knowledge of accounting and related disciplines as well as experience in translating texts in this field,
- b) has continuous support of a specialist on the IFRS (which means working in tandem, or the possibility to consult him, whenever necessary, about specialist terminology),
- c) uses specialist translation support programs with vast translation memory,
- d) during the time of the IFRS translation will not be engaged in another professional occupation.

Another option is translating by a two-person team consisting of an accounting expert and a philologist-professional translator.

Conclusion

Hejwowski's cognitive-communicative theory is a sound, coherent and multidisciplinary theory of translation which provides high quality translations, i.e. a translation producing a text that will be interpreted by its readers in a manner possibly closest to that of the readers of the original text. Cognitive-communicative theory may be directly and successfully applied to the IFRS translation process, especially as far as the translator competence profile is concerned. According to Hejwowski's theory, a high quality translation is possible on condition that the translation is carried out by people with the proper qualifications and predispositions. Applying that to IFRS translation makes it possible to set the necessary qualifications of an IFRS translator, which are: advanced knowledge of English and the target language (preferably including the comparative approach), a knowledge of translation theory, strategies and techniques, and knowledge of the specifics of specialist translation. Knowledge of accounting (or, more broadly, economics) and Anglo-Saxon cultural distinctness is helpful, but not indispensable, whereas communication skills are of primary importance.

If the IFRS are translated by one person with the right qualifications and enough time for this work, the resulting translation will be as close to the original as possible. And there will no longer be any reason to refer to it with the words *Lost in Translation* or *Destroying Content while Changing Context* (used in the titles of two articles dealing with problems in the IFRS translation). There are excellent translations of the Bible, Shakespeare or Proust, so the same is possible in the case of the IFRS. What needs to be done is to take advantage of the expertise of translation theorists.

From the scientific perspective, the present paper can contribute to developing a framework (based on translation theories) for IFRS translation. As regards practical application, the guidelines that it presents can be used by institutions and organizations responsible for official IFRS translations (e.g. in Poland – the Finance Ministry and the Accountants Association in Poland).

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*DISCLOSING INTANGIBLE ASSETS IN COMPANY ANNUAL REPORTS:
EVIDENCE FROM POLAND*

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Abstract

Purpose of the article The aim of this work is to show the scope and the specific character of disclosures of intangible assets comprising intellectual capital in the annual reports of companies as well as the assessment of the state of reporting information dealing with intangible assets in companies being studied in Poland in relation to research conducted within this field in other countries.

Methodology/methods An empirical study on the subject of disclosures of intangible assets was conducted on selective companies listed on the Warsaw Stock Exchange in Poland. Annual reports of 57 companies perceived by investors as having hidden potential contributing to the generation of market value of the enterprise were analyzed. The methodology of Guthrie and Petty based on the aggregation of studied intangible assets within the three basic components of intellectual capital: human capital, organizational capital and structural capital (Guthrie and Petty, 2000) was adopted for the study.

The scientific aim is to fill the science gap in the area of disclosures dealing with intangible assets contributing to intellectual capital.

Findings Companies included in the study were characterized by a low quantitative range of disclosures dealing with intangible assets contributing to intellectual capital. This is confirmed by the overall value of the ICD – 49.9%, which means that the number of indications within the area of intangible assets contributing to intellectual capital in analyzed reports did not exceed 50%.

Conclusions The scope of reporting in the area of intangible assets is determined on the one hand by the constraints of the effective accounting standards and on the other by the information policy of companies in the area of disclosures in regards to those intangible assets which do not meet the definition of assets and are not expressed as elements of the balance sheet.

Keywords: intangible assets, disclosures, annual reports

JEL Classification: M15, M21

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Introduction

Intangible assets or the knowledge and skills of employees, organizational culture, technological re-sources, customer contacts, customer lists and trademarks all contribute to the creation of above average value (Lev, 2001; Ballou et al., 2004). However, their individual and differing nature is the main problem in recognizing them in the present system of financial reporting, the final product of accounting.

Within financial reporting intangible assets are not described adequately in relation to their true value and are not presented in a clear and concise manner. This is due to the accepted accounting standards de-fining the conditions of what can be expressed as assets. The problem mainly concerns intangible assets which have not been activated or those that do not fulfill the criteria allowing them to be expressed as as-sets within a financial report (balance sheet). From the accounting perspective they make up the "hidden" potential of the enterprise determining the market value of such a business. In effect the relevance and adequacy of financial reporting is becoming more and more limited and loses importance (Lev, Zarowin, 1999). This causes gaps in information within the area of intangible assets which are a part of the intellec-tual capital of an enterprise. This is shown by the growing disparity between the company's market value and its value determined through accounting, especially when it comes to knowledge based enterprises.

In considering the limitations of financial reporting in expressing intangible asset as elements of the balance sheet, the solutions seems to be the expansion of the scope of voluntary disclosures within the descriptive sections of the financial report as well as within the management's reports being the mandatory element of annual reports of companies. This allows for greater informational openness of companies through disclosure of information which permit the formulation of opinions regarding the value of an en-terprise and those factors which shape it. This is important from the perspective of building long-term rela-tions with stake-holders.

Interest in studying the problem of disclosures connected with intangible assets dates to the late 1990's. Research conducted in this area can be divided into two groups. The first group concerns the description of the state of disclosure of information concerning intangible assets in the context of their content and amount, and includes research conducted in Australia (Guthrie and Petty, 2000), Sweden (Olsson, 2001), Ireland (Brennan, 2001), Great Britain (Williams, 2001), Italy (Bozzolan et al., 2003), Canada (Bontis, 2003), USA (Abdolmohammadi, 2005), Malaysia (Goh and Lim, 2004), Hong Kong (Guthrie et al., 2006), Sri Lanka (Abeyssekera, 2008), New Zealand (Whiting and Miller, 2008), India (Joshi et al., 2009) and Bangladesh (Khan and Ali, 2010) or the international comparison studies within this area (for example Bozzolan et al., 2006; Guthrie et al., 2006). The second group concerns the study of the relationship be-tween the level of disclosure and capitalization, sector, age or the profitability of companies and includes studies on the correlation of the level of disclosure and company size (Bukh et al., 2005; Guthrie et al., 2006; Oliveira et al., 2006), field of business (Abdolmohammadi, 2005), ownership and age of the compa-ny (Bukh et al., 2005; Whiting and Miller, 2008). Research in this area was also conducted by: Li, Pike & Hannifa, 2008; Yi & Davey 2010; Goebel, 2015.

In Poland studies concerning the disclosure of information about intangible assets comprising intellectual capital were few. In reality there are only two studies which may be quoted. The first dealt with the analysis of the level of voluntarily disclosed information dealing with intangible assets in annual reports between the years 2005-2007 (Swiderska, 2010) while the second concentrated on this field but only in connection with publically traded companies within the banking sector (Marcinkowska, 2010). Our own research conducted in 2012 on selected companies traded on the Warsaw Stock Exchange in Poland filled this gap and, at the same, time expanded research gains within this field.

The aim of this work is to show the scope and the specific character of disclosures of intangible assets comprising intellectual capital in the annual reports of companies as well as the assessment of the state of reporting information dealing with intangible assets in companies being studied in Poland in relation to research conducted within this field in other countries.

1 Methodology

An empirical study on the subject of disclosures of intangible assets was conducted on selective companies listed on the Warsaw Stock Exchange in Poland. Annual reports of 57 companies perceived by investors as having hidden potential contributing to the generation of market value of the enterprise were analyzed. They are characterized by the greatest share of intangible assets in value creation of an enterprise – an average of approximately 80%. The cluster analysis method allowing combining of companies similar in respect to the share of individual intangible assets in the market value of the enterprise into groups was used to choose the companies for the study (Michalczuk, 2013).

The study applied the method of content analysis which consisted of assigning qualitative and quantitative information into previously defined categories in order to gain accuracy in the interpretation and presentation of

results. During the codification of disclosed information regarding intangible assets included in the study a scale of 0-3 was used where the numbers meant:

- 0 – no information;
- 1 – rudimentary information (superficial);
- 2 – information containing a more complete description;
- 3 – information containing a more complete description as well as numerical data.

The analysis concerned descriptive portions of the content of 2010 annual statements, meaning the descriptive part of the financial report (additional information) and the activity report prepared by management.

The methodology of Guthrie and Petty based on the aggregation of studied intangible assets within the three basic components of intellectual capital: human capital, organizational capital and structural capital (Guthrie and Petty, 2000) was adopted for the study. Most research conducted on this subject is based on this methodology. As a result 24 intangible assets reflecting various areas of their influence on the creation of the value of the enterprise were verified.

The content analysis method used in the study is commonly applied throughout the world in the diagnosis of the state of disclosures dealing with intangible assets in annual company reports. Assessment of the level of ICD (*Intellectual Capital Disclosure*) was performed on the basis of the following indicators:

- 1) general ICD indicator measured as a percentage of indications (disclosures in reports) concerning all intangible assets contributing to intellectual capital;
- 2) detailed ICD indicators measured as a percentage of indications (disclosures in reports) concerning intangible assets contributing to human capital, relational capital and structural capital.
- 3) the share in percent of disclosures of intangible assets contributing to human capital, structural capital and relational capital to the total value of the ICD indicator.

The application of the above described indicators was the basis for the analysis of the number of disclosures.

2 Results

A low quantitative range of disclosures dealing with intangible assets contributing to intellectual capital is characteristic for companies included in the study. Value of the ICD – 49.9% means that the number of indications within the area of intangible assets contributing to intellectual capital in analyzed reports did not exceed 50%. A wide diversity in the quantity of disclosed information by companies was also observed. Five was the smallest number of disclosed intangible assets and was characteristic to 4% of companies included in the study while 20 was the greatest number of disclosed intangible assets and concerned only 5% of companies. This means that none of the participating companies disclosed all of the intangible assets included in the analysis. The greatest number of companies (21%) disclosed information concerning 9 intangible assets. The average number of indications was 11.98 and the standard deviation came out to approximately 4.14.

The companies being studied expressed information regarding intangible assets to varying degrees. This is especially visible through the review of components contributing to intellectual capital.

2.1 Disclosures concerning intangible assets contributing to human capital

Six intangible assets were included in the analysis within the area of human capital. The detailed ICD indicator for this group was at a level of 30.1%. Information concerning all intangible assets included in the study contributing to human capital could be found in barely 7% of company reports being analyzed. It should be made clear that 1/3 of them did not contain any information concerning intangible assets. The average number of disclosures was 1.86 with standard deviation being 1.82 which shows a very strong variation in this area. Intangible assets contributing to human capital in the reports being analyzed are disclosed to varying degrees as illustrated by Table 1.

Table 1 Percentage of disclosures of intangible assets in the area of human capital

Intangible assets type	Percentage of disclosures (%)
professional qualifications	54,4
professional skills	31,6
knowledge connected with current work	29,8
initiative and innovativeness	28,1
education	21,1
know how	21,1

Source: Author's own elaboration

Companies included in the study disclosed the most information connected with professional qualifications. This information was disclosed in reports of over 50% of companies. Less than 32% of companies included disclosures concerning professional skills. Nearly 1/3 of companies informed about the knowledge possessed by the employees connected with current work being performed by them as well as with their imitative and innovativeness, but only 1/5 of them disclosed information connected with the employees' education or know-how.

2.2 Disclosures concerned with intangible assets contributing to structural capital

Companies taking part in the research to a greater degree disclosed information concerning intangible assets contributing to structural capital. The analysis of indicators in this area was performed on the basis of 9 intangible assets. The detailed ICD indicator for this set of intangible assets added up to 54.3%. All companies included in the study disclosed information concerning intangible assets contributing to structural capital but at varying degrees. In about 7% of annual reports being analyzed only 2 intangible assets were identified, while only 2% of companies disclosed information concerning all intangible assets being considered. In over 23% of annual reports information about 4 intangible assets from this group could be found while in 1/5 of reports disclosures concerned 6 categories being considered. The average number of disclosed tangible assets totaled 4.89 with standard deviation being 1.71.

Intangible assets contributing to structural capital were disclosed in analyzed reports to varying degrees which is presented by Table 2.

Table 2 Percentage of disclosures of intangible assets in the area of structural capital

Intangible assets type	Percentage of disclosures (%)
financial relationship	100,0
information systems	82,4
management philosophy, processes, systems	66,7
patents, licenses	52,6
innovation processes (including research and development)	47,4
network systems	45,6
corporate culture (organizational)	42,1
copyrights (model rights)	26,3
brands (trademarks)	19,3

Source: Author's own elaboration

In the area of structural capital information about financial relations was disclosed by all participating companies. Over 80% of companies reported about implemented information systems and 66% about management philosophy, processes and systems. Disclosures concerning patents and licenses were presented by barely half of companies. Information about intangible assets including innovative processes (including research

and development), network systems, and corporate culture could be found in reports of over 40% of companies. Additionally ¼ of companies disclosed data about copyrights held while less than 20% mentioned brands (trademarks).

2.3 Disclosures connected with intangible assets contributing to relational capital

Information dealing with all intangible assets contributing to relational capital can be found in barely 2% of companies being studied. The most companies (21%) showed information about 5 intangible assets covered by the analysis. Nearly half disclosed 5 to 7 categories while 7% of companies included in their reports information relating to only two intangible assets from this group.

Intangible assets contributing to relational capital are disclosed in the analyzed reports to varying degrees as illustrated by Table 3.

Table 3 Percentage of disclosures of intangible assets in the area of relational capital

Intangible assets type	Percentage of disclosures (%)
favorable contracts	86,0
customer data base	80,7
company image	75,4
connections with market partners	68,4
relations with customers	68,4
distribution channels	66,7
brand recognition	56,1
license agreements	12,3
franchise agreements	6,6

Source: Author's own elaboration

Over 80% of companies considered in the study included information about favorable contracts as well as their customer data base in their annual reports. Additionally, a high percentage of disclosures concern the company's image. Nearly 70% of companies being studied inform about their connections with market partners, relations with customers and distribution channels while a low rate of disclosures concerns such intangible assets as: signed license agreements (12.3%) or franchise agreements (8.8%).

3 Discussion

The presented research is a source of knowledge on the state and tendencies of reporting of intangible assets to stakeholders of an enterprise. It is based on a method of analyzing annual report content. Intangible assets classified as part of individual components of intellectual capital are studied while the level of disclosures (quantitative and qualitative) is defined using the ICD (*Intellectual Capital Disclosure*) indicator.

Scandinavian companies, especially Danish and Swedish, are without a doubt pioneers in reporting information concerning intangible assets. Research conducted in Danish companies (Bukh et al., 2005) show a very high level of disclosures within the area of intangible assets. This is determined first of all through a well developed separate reporting in regards to intangible assets as well as understanding by Danish companies the importance of disclosures within this area. Studies done in Swedish companies also show a high level of intangible asset disclosure. It is within these countries that reporting about intangible assets in Intellectual Capital Reports has become the most wide-spread. Research carried out in other countries indicate that the practice of reporting intangible assets in separate reports is not so widely applied and the disclosures are mainly placed in the descriptive portions of mandatory annual reports (Michalczyk, 2013).

Studies conducted in companies listed on the Warsaw Stock Exchange in Poland also showed that, despite growing importance of intangible assets in contributing to the market value of contemporary enterprises, they are not sufficiently represented in disclosures made in annual reports. The quantitative ICD indicator of companies totaled 49.9% which means that the number of intangible assets disclosed contributing to intellectual capital did not exceed 50%. Furthermore, reporting is not systematic or organized. Information is scattered and can be found in various places within annual reports – greatest amounts being contained in activity reports. Disclosures are

mainly descriptive in nature rather than valuating which is the result of difficulties in assigning monetary value to intangible assets such as: management philosophy, corporate culture, employee skills, etc. Similar conclusions can be drawn after analyzing results of research conducted in this area in other countries.

The analysis of the results of research permits the claim that the analyzed companies differentiate the scope of intangible asset disclosure in the area of individual components of intellectual capital. This is also characteristic of studies conducted in other countries (Table 4).

Table 4 Studies on the subject of intangible asset disclosure within individual components of intellectual capital

Study	Country	Share of disclosure in total ICD (%)		
		Intangible assets contributing to relational capital	Intangible assets contributing to structural capital	Intangible assets contributing to human capital
Guthrie and Petty (2000)	Australia	40	30	30
Brennan (2000)	Ireland	49	29	22
Bozzolan et al. (2001)	Italy, Great Britain	56	27	17
Bozzolan et al. (2003)	Italy	49	30	21
Oliveras & Kasperskaya (2005)	Spain	51	21	8
Vandamaele et al. (2005)	the Netherlands, Sweden,	40	30	30
Abeysekera & Guthrie (2005)	Sri Lanka	44	20	36
Oliveras et al. (2006)	Portugal	8	25	27
Sujan & Abeysekera (2007)	Australia	48	31	21
Whiting, Miller (2008)	Zealand	47	21	32
Li et al. (2008)	Great Britain	38	34	28
An Yi & H. Davey (2010)	China	46	30	24
Haji, Ghazali (2012)	Malaysia	47	20	33
Michalczuk (2013)	Poland	43,6	40,8	15,6
De Silva, Stratford, Murry (2014)	Zealand	29	16	55
Goebel (2015)	Germany	36,9	43,1	20

Source: own work based on: Guthrie, Petty, 2000; Brennan, 2001; Bozzolan et.al., 2003, 2006; Oliveras, Kasperskaya, 2005; Vandamaele et al., 2005; Abeysekera, Guthrie, 2005; Oliveras et al., 2006; Sujan, Abeysekera, 2007; Whiting, Miller, 2008; Li et.al., 2008; Yi, Davey, 2010; Haji, Ghazali, 2012; Michalczuk, 2013; De Silva, Stratford, Murry, 2014; Goebel, 2015

In companies listed on the Warsaw Stock Exchange in Poland the most information in annual reports could be found concerning intangible assets contributing to relational capital. This indicator reached a level of 43.6%. This high value of disclosures is confirmed in studies conducted in other countries where the recorded ICD indicator was between 30 and 58%. Similar to other countries companies in Poland mainly disclosed information connected with intangible assets such as: relations with customers, customer loyalty, distribution channels or business cooperation, license agreements or brand image. Orientation in reporting toward this group of intangible assets is surely determined by the processes of globalization, growing competition and the need to concentrate more on external factors. It can also be the result of concentration of these companies on a strategy aimed at the customer. This aspect is presented by Guthrie & R. Petty stressing that concentration of attention on these assets is the result of management trend in the area of "the rationalization of distribution channels, changes in the configuration of the chain of the value of a business, the assessment of the value of the customer, globalization and market segmentation" (Guthrie, Petty Ricceri, 2006).

The lowest level of the ICD indicator (at 15.6%) could be observed, however, in relation to intangible assets contributing to human capital. Similar conclusions can be drawn through analyzing the results of research carried

out in other countries. Studies conducted among enterprises from New Zealand, Bangladesh and China, where the greatest scope of disclosed information within the area of human capital were observed, are an exception. Generally the low level of disclosures concerning intangible assets contributing to human capital could be explained with the desire to protect the enterprise from imitation of these valuable assets in the short term. Keeping information about them secret is one of the ways of preventing such imitation or at least postponing it for as long as it is possible. This problem may especially concern companies within the information technology sector where the main creator of value is human capital. These enterprises could fear that a scope of disclosures that is too wide may promote copying of their practices and in effect cause the eradication of their competitive advantage.

The quantitative ICD indicator, in comparison to research carried out in other countries, reached a relatively high level (40.8%) for disclosures concerning intangible assets contributing to structural capital. A similar situation can be observed in studies conducted in Great Britain and Germany.

Conclusions

The scope of reporting in the area of intangible assets is determined on the one hand by the constraints of the effective accounting standards and on the other by the information policy of companies in the area of disclosures in regards to those intangible assets which do not meet the definition of assets and are not expressed as elements of the balance sheet.

The situation observed in the analyzed companies listed on the Warsaw Stock Exchange in Poland is analogical to that which has been shown in research conducted throughout the world in the area of disclosures concerning intangible assets. The following should be noted:

- 1) there is a lack of application of an ordered plan for disclosures in the area of intangible assets;
- 2) there is a low level of disclosures concerning intangible assets as part of companies' annual reporting;
- 3) disclosures are mainly descriptive rather than numeric in character;
- 4) there is a lack of sufficient transfer of descriptive forms to standard measures allowing the assessment of individual intangible assets and their influence on creating value;
- 5) differences observed in the level of disclosures concerning intangible assets in relation to components of intellectual capital: human capital, organizational capital and relational capital;
- 6) orientation of companies on disclosing of information mainly about intangible assets contributing to relational capital;
- 7) a very low level of disclosures in the area of intangible assets contributing to human capital.

Considering aspects mentioned above implementation of measures which aim to increase the number of disclosures concerned with intangible assets contributing to intellectual capital is imperative. These should concentrate on activating instruments which will allow management to realize the growing importance of intangible assets in creation of market value of an enterprise as well as the fact that being open with the information concerning the area of intangible assets affects the correct assessment of the credibility and stability of the company by various groups of stakeholders which, in turn, translates to its ability to develop and gain competitive advantage.

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*SOCIAL REPORTING AND ACCOUNTABILITY IN ITALIAN ACADEMIC
SYSTEMS*

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Abstract

Purpose of the article This paper aims to give an overview of accountability systems in Italian universities and of their prospects following recent reform laws. After a sketch on the improvement of non-financial communication towards stakeholders, the work deals with social reporting in academic research and education, its potential developments and the first results reached.

Methodology/methods The research methodology used, based on observed cases analysis and content analysis, provides us with an interesting overview of the state-of-the-art and allows us to make some preliminary assessments about what lies behind the behavior that universities should adopt according to the reform. After a brief analysis of the most relevant literature regarding the topic, we shall address and compare Italian experiences of social reporting.

Scientific aim This work aims to expand the set of knowledge related to accountability tools typical of university systems.

Findings Effective accountability systems can indeed turn from tools into goals in public administrations, and in doing so reporting takes on a completely different meaning: it is a contribution to the social added value created by the university, an extra obligation to take towards stakeholders, a further service to engage in to strengthen democracy.

Conclusions The culture of accountability should be introduced and guided mainly by law, with legal requirements about deadlines, tools and goals, and supervised by third-party authorities. Further work is still needed to fully grasp measurement complexities and the potential lying in the evaluation of academic performance – especially with relation to sociality and sustainability – that plays an important role in national and international ranking systems.

Keywords: Social reporting; Accountability; University System; Performance

JEL Classification: I23, M14

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Introduction

In Italy, the reform law n. 240, 30 December 2010, in the pursue of real and not merely formal change (on real change, of either first or second level, see above all Watzlawick et al., 1973), one that would also be long-lasting, profitable and involve university management in the Italian system at any level, introduced significant changes in how universities work in Italy, that we can group in three categories:

(1) of identity, which refer to basic aspects of the university system: founding principles and purpose of the system, preeminent mission of universities

(2) of governance (Angluin and Scapens 2000, p. 9; Deem 2003, p.242; Stoker, 1998, p. 17-27), related to governance contemplate, on the other hand, very targeted and specific measures regarding governing bodies, their capacity and the main rules at the basis of their operation and evaluation

(3) of accountability, which widen the range of instruments aimed at measuring, monitoring and evaluating management: good examples, albeit in different ways, are the introduction on the one hand of financial and capital accounting (Catalano, 2009) and on the other hand of analytical accounting, and the creation of the ethical code (Gray, Owen & Adams, 1996; Gray, 2002; Messner, 2009; Mulgan, 2000; Pezzani, 2003; Ricci, 2005; Roberts, 2009; Sinclair, 1995.).

Regarding the latter, the main goal is therefore increasing the quality and quantity of tools a university can use to measure – and report about – its activities to third parties. However this means, as we shall see, that the autonomy needed to compete properly comes at a price, that is accountability. Greater autonomy and greater accountability can, for example, improve the opportunities for fundraising, clarify the rationale behind fee increases, or improve relations with other bodies or institutions. Here we can also understand the bias the reform implicitly holds towards the current accounting system based solely on commitment – or for obligations – accounting. Leaving aside changes related to the first two types of intervention, although well aware of the vital connections existing among all the measures adopted, we shall focus on accountability issues and, in particular, on how the reform tends to significantly widen the reporting system of Italian universities, aiming at greater transparency and intelligibility of business results, and on the first Italian experiences of new forms of accountability.

1 Research methodology

The research methodology used, based on observed cases analysis and content analysis, provides us with an interesting overview of the state-of-the-art and allows us to make some preliminary assessments about what lies behind the behavior that universities should adopt according to the reform. After a brief review of the reform content and an analysis of the most relevant literature regarding the topic, we shall address and compare Italian experiences of social reporting, examining the universities involved in the social reporting process. Looking more closely at the reform content, however, it is interesting to notice how it calls for: a) the revision of accounting rules, in order to ensure consistency with the university three-year plan, greater transparency and homogeneity, and to allow a proper evaluation of university assets and of its overall management; b) the introduction of a financial and analytical accounting system and of individual and consolidated financial statements based on specific accounting principles and guidelines that will lead to the preparation of a budget and a financial accounting report, in order to allow the proper monitoring of public administrations' accounts; c) the adoption of an ethic code for the individual academic community that includes teaching and research staff, technical and administrative staff and university students. Such code will determine the fundamental values of the community, promote the acknowledgement and respect of individual rights and the acceptance of duties and responsibilities towards the institution one is part of, through its fundamental norms of conduct that are meant to be valid within the community.

2 Reform pressures and the need for accountability in Italian universities

The nature of accountability is mainly public (Bovens, 2009; Ricci, 2016; Kluvers, 2003), and it is its very nature that has made this notion so important within the overall reform of the university system (Veugelers & Van Der Ploeg, 2008). Accountability systems – aimed at rendering account by those who administer to those who are administered – originated from the dynamic of democracy (Borowiak, 2011) and responsibility and refer to the right/duty to inform that develops in companies where public money is used, regardless of the complexity and indefinability of their form and content (Sinclair, 1995, p. 224) or of their intrinsic limits (Messner, 2009, p. 924; Roberts, 2009, pp. 968-969). There has been recently much debate around the notions of autonomy and durability in Italian universities despite, or because of, a prolonged political and social delegitimation process whose main result is that public confidence in the Italian university system and its members has been at rock bottom for a while. A wide range of political, journalistic but also scientific literature, containing strong

arguments and in some cases sterile criticism, is part of a process that has helped erode the Italian university system in its very foundations (Abruzzese, De Michelis & Galli della Loggia, 1997; Morcellini & Martino, 2005; Perotti, 2008; Simone, 1993). The main charges and consequent verdicts regard the rating of the Italian university system, that many depict as a negative triple-A: anarchia (anarchy, instead of autonomy), autoreferenzialità (excessive self-reliance and isolation, especially from a scientific point of view), autoconservazione (self-preservation, with relation to governance). Decreasing public resources, low productivity of the human capital, increasing competitiveness of international markets, increasing competition among public universities and between those and private ones (particularly after the introduction of online universities), are just some of the main reasons at the basis of a renewed interest in the topic. Such phenomena, however, have been perceived as real threats, dangerous for the whole country and for the very survival of universities in Italy, rather than as important opportunities, this way putting at risk budget autonomy and business continuity in a very short time.

As a result of this complex phenomenology we can say that the following intertwined factors are back on the agenda of university systems:

- academic reputation: it is a direct consequence of a very large set of elements not easily measurable, or measurable in an arbitrary/excessively discretionary way (Aghion, Dewatripont, Hoxby, Mas-Colell, & Sapir, 2010, p. 14; Censis, 2009, 2010, 2011, 2012, 2013, 2014, 2015).
- inter-institutional cooperation, which stems from the web of relations the university interweaves with the territory it is part of, often regardless of what is produced in terms of education and research (Carnegie Foundation for the Advancement of Teaching, 2005; Gornitzka, Kogan, Amaral, 2005);
- the role of intangibles: as its main product is knowledge (GBS, 2008b; Gorz, 2003; GRI, 2002, 2006; Putnam, 2001), a university mainly produces intangibles, and through their production and accessibility it provides the conditions for the development and growth of an economy, and those for the civilization of a territory and a population.

The awareness that the development of knowledge transmission boosts the economy and improves the nation's material and immaterial well-being, helps us understand the legislator's choice.

The three factors mentioned above all need specific reporting tools that are able to relate in an ethically responsible and credible way the producer (university) with its stakeholders (students, professors, families, the scientific community, local bodies and institutions, businesses, financial operators etc.), that are themselves called to co-produce and co-create value. All three factors considered need appropriate forms of accountability, aimed at the best possible measurement and reporting. That is due to: a) the specific and highly specialized content of the relations that administrators establish with people who are administered, with businesses and with the reference social environment in general; b) the complex value, especially in the medium and long term, of the social and environmental impact of academic activities and investments; c) the sustainability of strategic decisions concerning research and education.

Financial reporting is therefore insufficient, limited and even misleading when it comes to measuring research quality, the impact of education on employment, or social and civic progress: social or sustainability reporting becomes therefore indispensable, something that goes beyond mere financial reporting, widens the original perspective and is able to adequately support assessments on reputation and consensus (Brennan, 2011; Saves, 2000), on strategies of cooperation and inter-institutional collaboration, on choices regarding intangible assets. It is paramount to revise standard reporting procedures with relation to the three points mentioned above, and in particular to introduce models of social reporting, also seen as a tool to improve relations aimed at: a) correctly identifying all stakeholders (Freeman, 1984); b) clearly defining the interests at stake, not only individual but also collective ones; c) properly defining areas of intervention; d) measuring effects, social setbacks, outcomes, democratic sustainability, all in terms of the individual and public value generated (Moore, 1995).

3 State of the art of the Italian academic system

The reform has not found all the Italian universities unprepared, at least with regard to accountability and the introduction of new reporting tools. The introduction of social reporting in Italy has followed different approaches, some of them now quite well-established, while others are still at embryonic stage. The Italian literature on the topic is quite wide (Cassone & Zaccarella, 2009; Del Sordo, Pazzi & Siboni, 2010; Frey, 2009; Mion & Melchiori, 2011), contrary to what happens in the rest of the world, where the specific literature on the adoption of social accounting in universities is still patchy or scarce (Fonseca, Macdonald, Dandy, & Valenti, 2011; Musyarofah, 2011). It should be stressed that the introduction of social reporting in Italy has been

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facilitated by: 1) cultural sensitivity and strong political will existing inside individual universities; 2) the presence of research groups directly involved in the study of ethics or accountability issues; 3) regulatory interventions promoted by reputable professionals or by the academic world, which have not directly affected the university system, but have nonetheless addressed the issue through the publication of papers, standards, guidelines, accounting principles. Examples regarding such principles are the standards issued since 2001 by various public and private bodies, especially from the public sector: the Milan-based GBS Study Group for social reporting, with its reporting standards for the public sector, issued in 2005, and its document no. 7, regarding social reporting in universities (GBS, 2008a); the Government Directive with guidelines for social reporting, issued in 2006; the Observatory for finance and accounting in local administrations at the Ministry of the Interior, with its guidelines for social reporting, issued in 2007. A study carried out in February 2016 and covering all Italian public universities, allowed us to assess the current situation with relation to social reporting. The methodology adopted was that of the telephone interview following examination of university websites and of official published documents. The first social report is dated 2004, referring to the period 2002/2003.

No doubt all content must be checked case by case, however it is worth stressing that almost all universities declare to refer to a specific standard or guideline. Table 1 indicates the cases considered.

Table 1 Social reporting in Italian universities (general overview)

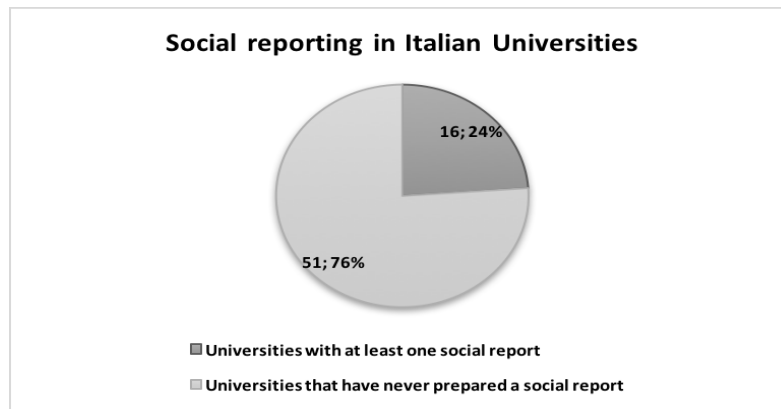
<i>n.</i>	<i>University</i>	<i>First social report (year)</i>	<i>Number of reports so far</i>	<i>Methodology adopted</i>	<i>Time span</i>
1	Università degli Studi di BARI ALDO MORO	2006	2	GBS (exceptions listed in the methodology note)	Triennial
2	Università degli Studi di BOLOGNA	2012	3	GBS; Baccini Directive; GRI	Annual
3	Università degli Studi di CAGLIARI	2006	3	Baccini Directive (GBS in future)	Annual
4	Università degli Studi di FERRARA	2006	8	Baccini Directive; GRI	Annual/Biennial
5	Università degli Studi di FIRENZE	2006	1	GBS; Baccini Directive; GRI	Annual
6	Università degli Studi di GENOVA	2010	1	No specific methodology adopted	Triennial
7	Università degli Studi INSUBRIA Varese-Como	2007	1	GBS; Baccini Directive; GRI	Annual
8	Università degli Studi di MACERATA	2007	6	GBS; Baccini Directive; GRI; AA 1000	Annual
9	Università degli Studi del MOLISE	2011	1	GBS; Baccini Directive; GRI	Annual
10	Università degli Studi di PAVIA	2010	1	GBS	Triennial
11	Università di PISA	2013	1	GBS; Baccini Directive; GRI; AA 1000	Quadriennial
12	Scuola Sup. di Studi Univ. e Perf. S.Anna di PISA	2004	2	GRI; ABI Guidelines; GBS	Biennial
13	Università degli Studi del SALENTO	2012	1	GBS	Biennial
14	Università degli Studi di SALERNO	2011	3	GBS; Baccini Directive	Triennial
15	Università degli Studi del SANNIO di BENEVENTO	2006	4	GBS	Biennial
16	Università degli Studi di TRIESTE	2008	2	GBS	Annual

Source: our elaboration, 2016

Table 2 Social reporting in Italian universities (based on number of reports so far)

<i>Italian State Universities</i>	67
Universities with at least one social report	16
Universities that have never prepared a social report	51

Source: our elaboration, 2016



Source: Our elaboration, 2016

Figure 1 Social reporting in Italian universities (based on number of reports so far)

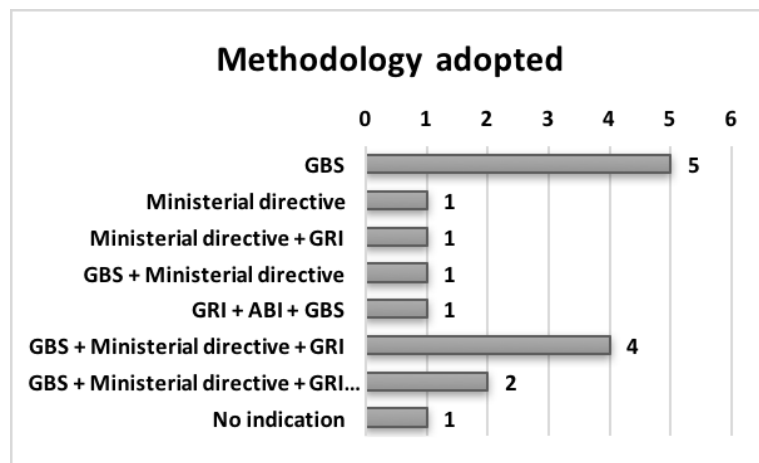
Table 2 and Figure 1 shows the overall picture, with a substantial 76% of Italian universities that still does not prepare any social or sustainability report. Figure 2 provides some indications regarding if and how sensitivity to the topic investigated changes according to where the university is based. It is quite clear that in terms of social accountability there is not a ‘southern problem’, unlike what has been said for centuries with relation to economy, development and quality of life. As to the methodologies adopted, the picture is on the other hand quite varied, with standards, guidelines and recommendations being similarly used. The GBS standard is currently preeminent, for different reasons:

- a) it is an Italian standard;
- b) it is university-specific;
- c) it is modeled on content and therefore more useful.



Source: Our elaboration, 2016

Figure 2 Geographical distribution of Italian universities adopting social reporting systems



Source: Our elaboration, 2016

Figure 3 Methodologies adopted by Italian universities with relation to social reporting

Conclusion

As to the opacity of public budgets and all other traditional tools of public reporting, much elaboration is still needed. First and foremost, the balance sheet should be considered as a true ‘window for values’. Also, financial statements and synthetic accounting records cannot automatically make clear and understandable what is not always so: as we noted earlier, many evaluations require very complex non-financial measurements, not always concisely expressible through monetary indicators. Social reporting can therefore play an important role in the

academic world. Based on the principles of consistency, transparency, clarity and usefulness of information, it can facilitate the full understanding of economic, political and social phenomena, therefore making academic strategies and policies easier to understand, to share and especially to finance and support if worthy. In recent years it has become clear that the legitimacy of the public administration towards society is not based solely on its institutional nature, but more and more on its ability to provide goods and services in a way that perfectly matches the expectations of citizens, workers, families and of the market in general (Pollitt, 1993; Pollitt & Bouckaert, 2000). This new relational configuration is also valid, albeit still not clearly appreciated, for the academic system, especially the Italian one in which private universities are scarce and financial autonomy is still very modest. Being early days, what said above inevitably involves some risks: the first one is to use initial forms of social reporting tools as 'safe havens' (for generic and ineffective models of administrative responsibility) rather than as 'uncertain starting points' (for effective and specific models of administrative responsibility). Moreover, in the absence of generally accepted models and standards, the limits of social reporting arising from:

a) excessive self-reliance, and b) reluctant comparison, are still considerable.

In scientific literature, the term accountability refers to the duty by an individual to be accountable towards others for his/her actions to define the relations between planning, decision, action and control in responsible and credible fashion (Ricci, 2005, p. 13). In detail, it is necessary to report how economic and financial resources were used, the transparency employed by people involved in the management, compliance with targets set at planning stage and with social results achieved over time, all that ensuring impartiality and comparability. The conditions under which such compliance is evaluated depend on how good the academic system of accountability really is. The degree of accountability usually depends on the following (Ricci, 2005, p. 14):

- a thorough and clear planning process;
- a clear definition of internal and external responsibilities;
- adequate accounting and extra accounting record systems;
- an effective internal monitoring and evaluation system;
- periodic reporting on the activities performed;
- a significant benchmarking activity;
- a significant use of technology in running communication processes.

The presence of such factors positively affects evaluation and accountability processes. Along these lines, social reporting should also improve the way third parties can evaluate the activities performed, in order to enhance managerial awareness. Reporting therefore has got an even deeper meaning and role in universities, if we think about the fact that resources come from direct and indirect contributions by local communities – this being the way the current system actually works – and that the money used is public, i.e. comes from the exercise of public functions but most important its use is aimed at promoting competitiveness, progress, democracy. This requires clear and thorough reporting, and strengthens the belief that only a legal obligation can ensure, at least at the beginning, the introduction and development of appropriate accountability systems in public bodies. In this regard the university reform, as per law 240/2010, should have been bolder.

Goal factors may be summarized as follows (Ricci, 2013, pp. 218-219):

- to spread the institution's reputation;
- to improve the management of consensus and of social legitimacy;
- to avoid boycott of the services provided;
- to face and overcome crises;
- to allow public debate regarding strategic choices to be made;
- to better focus on the results achieved;
- to make decisions that take better into account tax issues;
- to facilitate internal (among departments) and external (among universities) comparison;
- to facilitate inter-institutional cooperation in federal perspective;
- to compete in the distribution of bonuses or rewards.

Effective accountability systems can indeed turn from tools into goals in public administrations, and in doing so reporting takes on a completely different meaning: it is a contribution to the social added value created by the university, an extra obligation to take towards stakeholders, a further service to engage in to strengthen democracy. It is therefore clear that the culture of accountability should be introduced and guided mainly by law, with legal requirements about deadlines, tools and goals, and supervised by third-party authorities. Ad hoc

agencies should therefore be set up during government mandates, in order to assess accuracy and transparency of the information provided, and take steps in cases of manipulation or misuse of investments in disclosure and accountability. For all these reasons, the definition of social reporting principles, recommendations or guidelines takes on a specific meaning in public administrations in general, and in universities in particular.

We think the legislator should amend the reform considering the mandatory adoption of social reporting or, if that is still performed on a voluntary basis, a clearer indication of principles or rules, regarding either processes or content. This would facilitate the start and the development of measurement and reporting activities that will be eventually more consistent, comparable and verifiable.

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*THE PERSPECTIVES OF FAIR VALUE ACCOUNTING: A LITERATURE
REVIEW*

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Abstract

Purpose of the article The objective of this paper is to analyse dedicated literature and to provide useful information about current Fair Value Accounting (FVA) perspectives after 7 years have passed since the Financial Crisis.

Methodology/methods A theoretical analysis of qualitative secondary data from over 30 dedicated scientific articles on FVA and Historical Cost Accounting (HCA) was used. The relation of FVA to the Financial Crisis was analysed by the secondary data from 2006-2009 literature, FVA problems – secondary data from 2006-2012 literature, perspectives of FVA were analysed by qualitative data from 2012-2015 literature.

Scientific aim FVA greatly influences investment choices and management decisions, but are there any FVA implications currently? Is it clearly advantageous and being used more than HCA? Is it going to be the only dominant accounting method in the nearest future?

Findings The analysis of the dedicated literature shows that currently in several fields, such as net asset forecast accuracy, using FVA is more advantageous. The areas that need further research to determine the preferable method are stock price volatility and prediction of credit losses. For illiquid non-financial assets HCA is still superior.

Conclusions It is impossible currently to rely solely on HCA or FVA, so a mix of HCA and FVA (or a mix of FVA and Amortized Cost) in the accounting, possibly with switching to some new models, is still going to be used for a while. The analysed problems and perspectives outline strong and weak spots for FVA usage. One of the main problems with FVA is information transparency, so a lot will depend on the further work of standards' setters for developing standards and regulations, which could address these problems effectively. As for limitations – a modern research is needed to understand possible effects of FVA during the periods of future booms and busts.

Keywords: fair value accounting, historical cost accounting, financial crisis, international financial reporting standards, transparency, procyclicality, volatility

JEL Classification: G01, M41, M48

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Introduction

In 2007, the US housing market started to collapse. When the banking losses were announced, and following the failure of leading investment banks such as Lehman Brothers, growing uncertainty encouraged other banks to retain as much liquidity as they could for themselves thus preventing the banks from lending to each other. The banks were failing to fulfil a key banking function, namely to make loans and ensure the adequate flow of liquidity into the economy. That had a devastating impact on worldwide economy.

Critics, such as Wallison (2008), Whalen (2008), Forbes (2009), Magnan (2009), Khan (2010), argue that Fair Value Accounting (FVA), the accounting method that captures the changes in value of assets and liabilities over time, has significantly contributed to the financial crisis and exacerbated its severity for financial institutions in the U.S. and around the world. On the other hand, many scholars and researches, such as Laux and Leuz (2009, 2010), Barth and Landsman (2010), Badertscher, Burks, and Easton (2012), Huizinga and Laeven (2012), Laux (2012), conclude that FVA played little or no role in the Financial Crisis.

FVA is distinguished from another accounting method - Historical Cost Accounting (HCA), which records the value of an asset as the price at which that asset was originally acquired.

The objective of this paper is to interpret evidence from the scientific literature and to provide useful information about FVA perspectives after 7 years have passed since the Financial Crisis.

We have to answer a fundamental question concerning FVA and its blame for being the cause of the recent Financial Crisis. Examining the dedicated literature we divide the proponents and opponents of the idea that FVA has caused the Financial Crisis into two groups for an easier assessment. The group of proponents is clearly bigger and has more scientific 'weight'. While collecting the opinions 'for' and 'against' we find that even proponents point out towards possible problems with the current FVA method. Outlining the most vivid problems that FVA faces nowadays is an important part of our article as well. At last we move to perspectives and test FVA vs HCA in several segments and areas.

The paper is organized as follows. In Section (1) we examine possible FVA influence on the Financial Crisis. In the following Section (2) we analyse several possible problems with FVA before we discuss possible perspectives for FVA in Section (3). We conclude our analysis of dedicated literature and provide an idea for future research in the last part of the article.

1 The proposition and opposition of FVA towards the Financial Crisis

In 2002, the International Accounting Standards Board (IASB), the independent standard-setting body of the IFRS Foundation, adopted International Financial Reporting Standards (IFRS) as the required financial reporting standards for the consolidated financial statements of all European companies listed on exchanges of EU member states, effective from 2005. IFRS are aimed to provide a global and easily understandable language so that company accounts are understandable and comparable across the globe. IFRS are currently replacing national accounting standards in many countries.

American *vis-à-vis* of IFRS is called Generally Accepted Accounting Principles (GAAP). US GAAP are the generally accepted accounting principles adopted by the US Securities and Exchange Commission (SEC). The Financial Accounting Standards Board (FASB) has been publishing US GAAP since 2008.

Maystadt (2013) in his report agrees that the EU's choice to adopt the IFRS has had strong positive effects in terms of the quality and comparability of financial reporting:

Even fervent critics acknowledge that the adoption of IFRS in 2005 was a real step forward for companies and all stakeholders in terms of comparability, providing a common language to be used between entities in the same group of companies as well as between international groups, and it increased transparency through the volume and the reliability of the information that companies are required to provide. (Maystadt 4)

While this voiced out official opinion sends a clear message that FVA is good, we will have to further analyse the scientific literature and sort the proponents and opponents of the idea that FVA was the source of the Financial Crisis (or had a severe impact) into two groups.

Table 1 The proponents and opponents of idea that FVA caused the Financial Crisis (or had severe impact)

Proponents	Opponents
Penman (2007), Benston (2008), Ryan (2008), SEC (2008), Laux and Leuz (2009, 2010), Barth and Landsman (2010), Bhat, Frankel, and Martin (2011), Badertscher <i>et al.</i> (2012), Huizinga and Laeven (2012), and Laux (2012)	American Bankers Association (2008), Sarkozy (2008), Wallison (2008), Whalen (2008), Forbes (2009), Magnan (2009), Khan (2010)

The proponents' list is clearly larger and consists of scholars and researchers while the opponents' list is shorter and we see politicians, regulators, and the popular press among them. It is understandable that a thorough scientific research outweighs an opinion of a media person, who could be using the popular situation in press and media to score some personal benefits. Another good sign for FVA is that in its letter (2008) to SEC American Bankers Association charges FVA with exacerbating the problems that exist in financial markets, while at the same time SEC (together with IASB/FASB) itself is the proponent of FVA and supports the idea that FVA wasn't guilty for the Financial Crisis in the first place.

Indeed, many researchers (see Table 1) confirm that FVA is not responsible for the crisis. In 2010 Laux and Leuz got back to the subject and using descriptive data and empirical evidence found out that it is highly unlikely that FVA added to the severity of the Financial Crisis in a major way. They acknowledge that while there may have been downward spirals or asset-fire sales in certain markets, only little evidence that these effects are the result of FVA was found. Badertscher *et al.* (2012) and Laux (2012) also show that FVA losses had minimal effect on regulatory capital, and there is no evidence of increased selling of securities during the crisis, or that FVA caused widespread fire sales of asset or contagion.

The analysis of scientific literature shows that FVA is unlikely to cause all the financial turmoil, which it's been accused of, during the period of 2007-2008. On the other hand, FVA cannot be held as an ideal accounting system either and its problems should be identified before moving to formulating its perspectives.

2 FVA problems

The overlook of possible FVA problems is begun with a major concern – the transparency and reliability of information, which is presented to its main users. The main worry about FVA transparency and reliability of information arises from the implementation of Level 2 (quoted prices in inactive markets, or whose values are based on models, for assets and liabilities) and Level 3 (values of assets and liabilities, which are based on prices or valuation techniques that require unobservable and significant to the overall fair value measurement inputs) information. Especially of Level 3, since the use of Level 3 inputs is necessary when observable inputs are not available. Landsman (2007) emphasizes that while disclosed and recognised Fair Values are generally informative to investors, but the level of informativeness is firmly affected by the amount of measurement error and source of the estimates. Krumwiede, Scadding, and Stevens (2008), analysing banking sector, state that Fair Value obscures the value creation process by combining present profit with unrealized capital gains (losses), thus providing irrelevant liquidation value. Magnan (2009) argues that though Fair Value should increase the transparency, instead it reduces the reliability of information by influencing and thus changing investors' view of company's stability and financial performance. We can conclude that the vector of the problem with transparency and reliability of information is indeed big and this concern has to be addressed by the regulators and standards' setters. Together with that, Laux and Leuz (2009) point out that the problem with transparency for HCA is even greater, especially during busts.

While the main concern for Fair Value Levels 2 and 3 is transparency and reliability of information presented to the main users, the implementation of Fair Value Level 1 (quoted prices in active markets for identical assets or liabilities) has its own difficulties. One is the assessing company's shareholder value in the context of Fair Value³. The problem, formulated by Penman (2007) and further discussed by Duhovnik (2007), arises when shareholder value is not one-to-one with market price. If the company adds value to shareholders by buying at input market prices and selling at output market prices, it arbitrages market prices and using Fair Value is considered to be a minus. Penman (2007) names another minus – Fair Value substitution for historical cost information (and prices depend on that historical information), i.e., when company carries investments in subsidiary at market prices, instead of equity method or proportionate consolidation. Both of these 'minuses' reveal a long list of cases where using Fair Value would put a company into disadvantage: (i) inventories; (ii) investments in a subsidiary where the firm has influence; (iii) instruments that involve customer relationships (i.e., commercial loans, mortgages held by originating banks, and core deposits); (iv) performance obligations; (v) receivable allowances and warranty liabilities; (vi) insurance assets and liabilities, other than investment assets; (vii) real estate held as input to business enterprise; (viii) environmental clean-up liabilities. The mentioned cases point out all the potential areas where FVA won't be advisable to be used at all, at least for the time being.

Another serious 'accusation' from the opponents of FVA – is a possible procyclical nature of this accounting method, i.e., when the market values of the assets rise, more credits are made available for people to acquire those assets, so more and more money start chasing fewer assets, stimulating further rise of the prices and reduction of credit premiums. Several authors, such as Bloomfield, Nelson, and Smith (2006), O'Grady (2008), Wallison (2009), believe that FVA is highly procyclical and should be either abandoned or at least significantly modified. This concern was addressed by Sole, Novoa, Scarlata, and Jodi (2009) by concluding that capital

buffers, forward-looking provisioning, and more refined disclosures can mitigate the procyclicality of FVA. In a later separate research Huizinga and Laeven (2012) investigated concerns about the potential procyclical nature of FVA, which could magnify fluctuations in bank lending and economic activity, but found little evidence that such effects are the result of FVA.

As for the last problematic area of FVA, we would like to point out the volatility and possible distortion from applying Fair Values. Plantin, Sapra, and Shin (2008), as well as Menicucci (2010) consider that FVA introduces a higher volatility in financial statements, therefore increasing both volatility and contagion in the market. At the same time Plantin *et al.* (2008) agree that Fair Value is superior to Historical Cost for junior assets (i.e., traded stocks) trading in liquid markets, but for senior, illiquid assets and liabilities, the harm caused by the distortion can outweigh the benefits. Sole *et al.* (2009) argue that despite concerns about volatility, FVA is the appropriate direction forward and can provide a measure that best reflects a financial institution's current financial condition.

All the aforementioned problems undoubtedly weaken the position of FVA and influence its perspectives. We will discuss those perspectives by comparing the situation between FVA and HCA in different financial segments and areas of accounting.

3 FVA perspectives

With the final release of IFRS 13 (Fair Value Management), including all the adaptations, the standards' setters have created a uniform basis for FVA. It is a really positive step in the right direction for this accounting method. FVA is slowly moving to new segments and is constantly tested and compared to HCA. To assess FVA perspectives we will examine several financial segments and areas of the accounting.

One of the concerns that are mentioned in the previous chapter is a possible added volatility of FVA. Brousseau, Gendron, Bélanger, and Coupland (2013) analyse the claims that FVA contributes to stock price volatility and study the relationship between market price volatility and FVA, as well as HCA. Their work concludes that there seems to be no major difference between FVA and HCA for different measures of market price volatility. Though, at the same time, they recognize that FVA could affect the judgment of users of financial statements and that unsophisticated investors may not fully understand the implications of FVA, so their work needs an extensive further research before the final verdict on FVA and its influence to stock price volatility could be made.

Liang and Riedl (2013) examine net asset forecast accuracy between Fair Value and Historical Cost. They find that the accuracy is higher for Fair Value than for Historical Cost, though this difference is attenuated when the Fair Value and Historical Cost models are more likely to converge (i.e., during busts). So we can make a conclusion that in net asset forecast accuracy Fair Value is either better or in some cases is on par with Historical Cost, and should be used by default.

The initial implementation of FVA was aimed mostly to account financial assets, leaving non-financial to other accounting methods. Has the situation changed in favor of FVA? Christensen and Nikolaev (2013) study the choice of Fair Value versus Historical Cost accounting for non-financial assets in a setting where market forces determine the outcome. They find a very limited use of FVA for those non-financial assets. The researches find that FVA is used only when reliable fair value estimates are available. The conclusion is made that Fair Value is unlikely to become the primary valuation method for illiquid non-financial assets on a voluntary basis.

Another interesting area is the prediction of credit losses. Cantrell, McInnis, and Yust (2014) compare net historical costs and loan fair values to see what is a better predictor for credit losses and find that Historical Cost information is more useful in predicting future net charge offs, nonperforming loans, and bank failures over both short and long time horizons. But, at the same time, it's doubtful that Fair Value is a clear 'looser' here, Cantrell *et al.* (2014) acknowledge that findings may have lacked scrutiny and with higher scrutiny environments the situation might be different. Further modern research is needed here.

In all these aforementioned areas FVA is being tested against HCA to find out which method is superior. But instead of using only one method, alternatives combining both these methods are presented in the scientific literature as well. For instance, as a possible perspective, Penman (2011) offers quite simple remedy for a 'good accounting'. According to him, earnings should be based on Historical (or Transaction) Costs from arm's length transactions and earned revenues from sales for measuring the results of operating not of speculating (Fair Value Levels 2 and 3); operating and financing activities must be kept within Fair Value (and at Level 1 only) useful only for financial items where return fully depends on the movement of external market price; and accounts should not attempt to include 'speculative' intangibles. While this suggestion looks quite logical, Macve (2014) in his critics of Penman's work argues that no recommendations are provided for most of the accounting issues that are currently in the 'too difficult box', such as leases, pensions, insurance, deferred tax, hedging and

goodwill (many liabilities where there often is no Historical Cost). So, doubtfully, if Penman's suggestion would hold its ground when and if a comprehensive future analysis would be ordered to test his theory.

From the analysis of dedicated literature it is clear that there's no distinctive 'winner' between HCA and FVA currently. In some areas (i.e., illiquid non-financial markets) the situation hasn't changed and using FVA is still considered to be a disadvantage. Therefore HCA cannot be abandoned or simply written off. Together with that FVA still needs a lot of attention and work as well. Accounting Boards are in the constant process of redoing many aspects of FVA, (i.e., revenue recognition, the accounting for leases, pensions, fair value measurement, financial instruments, income taxes, allowance for credit losses, off-balance sheet vehicles), and have recently prepared new standards (i.e., on stock option accounting, put options, impairment accounting) in response to failures of existing accounting.

As for the improving transparency of the information needed for banking regulation and general financial reporting, there were several initiatives already fulfilled.

To name a few, in United States of America (USA) Consumer Financial Protection Bureau (CFPB) was established in 2012 to "ensure that consumers get the information they need to make the financial decisions they believe are best for themselves and their families—that prices are clear up front, that risks are visible, and that nothing is buried in fine print⁴".

European Union (EU) responded to the Financial Crisis with creation of the Banking Union. In November 2014 the ECB assumed responsibility for the supervision of all credit institutions in the Banking Union. As quoted in KPMG's report⁵ "The ECB has the resources, expertise and inclination to undertake large-scale data analysis, so banks should expect a demand for data at a very granular level". This means, that ECB has been developing the tool to impose the required level of information transparency from the banks.

All these initiatives in the USA and EU should influence the transparency of information and the financial stability greatly, making information more reliable both for ordinary consumers and regulated market. The increased information transparency should strengthen the position of FVA and let the accounting shift even more towards FVA as a default accounting method.

Conclusion

The analysis of dedicated literature shows that we cannot blame FVA for the Financial Crisis – it was merely a 'litmus paper' that showed the weakness of the financial system which failed to estimate the real level of risk connected to the fast growth of structured risks of mortgages.

It seems that the days when accounting relied only on HCA are long gone and won't be ever coming back. We definitely cannot rely solely on HCA, since it has its own problems and in some areas those problems are at least as big as for FVA or even worse (i.e., the problem with transparency for HCA).

FVA cannot be solely relied on as well, since there are still unsolved problems, such as transparency, reliability, one-to-one condition for shareholder values, volatility, and several limitations (i.e., subjectivity problem in value estimation, and short term volatility in results) with this accounting method. Improving transparency of information should be a top priority. It is very important that management, utilizing Fair Values, would provide information to investors instead of voicing own opinions, since it is the information that investors are indeed seeking.

The analysis of the dedicated literature, concerning the perspectives of FVA, shows that currently in several segments using FVA is more advantageous, such as net asset forecast accuracy. The areas that need further research to determine the preferable method are stock price volatility and prediction of credit losses. For illiquid non-financial assets HCA is still superior.

It is impossible for some appealingly simple remedies, like Penman (2011) suggests, to be used. It would require a costly thorough analysis and a comprehensive framework to be created first. This kind of ideas does look logical and appealing on the paper but currently inconceivable. FASB hasn't managed to fully adopt IFRS to replace US Generally Accepted Accounting Principles (US GAAP) yet⁶, even though this initiative was scheduled to go live in 2014. And the synthesis of IFRS and US GAAP into united set of standards should be the basis of future accounting.

The general notion is that we will still have to use a mixture of HCA and FVA (or more likely a mix of FVA and Amortized Cost) in the accounting, with switching to some new models (i.e., to an expected-loss model for impairments on loans not recognised at Fair Value). But if the information transparency could be further improved, we could shift more towards FVA as new segments could be accounted with Fair Value more reliably.

Our analysis, however, should be interpreted carefully, as we lack modern research to understand possible effects of FVA during the periods of future booms and busts. The Fair Value measurement has been constantly changing, at least, now we have an active regulated trading market that didn't exist during the Financial Crisis.

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As for a possible future research it would be interesting to analyse all the initiatives (i.e., CFPB, Banking Union) and regulations that FASB and IASB have been issuing lately to see if they have a measurable impact (and to what extent) on improving FVA information transparency.

Notes

- ³ This idea is close to 'deprival value' concept, which appears (according to Penman, 2007) in Accounting Standards Board, Statement of Principles for Financial Reporting, Australian Accounting Research Foundation, Accounting Theory Monograph No. 10, Measurement in Financial Accounting.
- ⁴ <http://www.consumerfinance.gov/the-bureau/>
- ⁵ Evolving Banking Regulation, March 2015, <http://www.kpmg.com>
- ⁶ <http://www.journalofaccountancy.com/news/2013/jan/20137119.html>

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*THE UNIVERSITY'S VALUE IN THE CONTEXT OF THE STAKEHOLDERS'
ANALYSIS*

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Abstract

Purpose of the article The success of the effective University's management will depend upon the commitment and participation of all University stakeholders. Given the effective management of university necessarily requires the correct identification of who stakeholders are, this article seeks to identify and classify the main stakeholders of the university assessing their value provided for the university.

Methodology/methods This research was conducted in two phases. The first phase consisted the literature review for identifying main stakeholder analysis and its implementation to higher education sector. The second phase consisted a quantitative methodology, based upon survey, for determining the university's stakeholders created value for the University.

Scientific aim The scientific aim is to make a contribution to the value research field of Universities in the context of stakeholders.

Findings The first finding of the article reveals that the concept of stakeholders is critical and difficult to implement everywhere and to everything. The second finding finds students, the teaching and research staff and employers identified as the main stakeholders. The third finding reveals that these university's stakeholders create value for the University, which can be expressed in four dimensions, reflecting economic, functional, social and emotional aspects. These findings allow to identify University's opportunities, benefits and barriers, which can influence the University's management.

Conclusions The article shows the complexity of problems in managing higher educational organizations in context of dynamics and its relation to the environment. The quantitative nature of this research represents one of the main research limitations. Another limitation relating to these results is that they derive only from one Lithuanian state university. But studies comparing different higher education institutions stakeholders' created value to the University might prove a highly fruitful approach for future researchs.

Keywords: university, stakeholders, value, university's management, higher education.

JEL Classification: M49, M40

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Introduction

The last decades have been defined by significant social economic, political and cultural changes, due to these changes the higher education sector has been transforming. Higher educational sector has been faced with globalization and strong competition. In that context, the managing of high education organizations means understanding the complexity of the environment and increasing the competitive advantage from stakeholders' perspective.

The issue of stakeholder identification and management is relatively well understood in the literature for private sector organisations (Christopher et. al., 2002, Rutterford et. al., 2006). This issue is important discipline in terms of effective management (Mitchell et al 1997) "making decisions" and planning strategy (Bryson, 2004), identifying problems to be solved (Freeman. 1984), and ultimately knowing who may exert their influence over the organisation (Mitchell et. al., 1997). As Tetřevová and Sabolová (2010) argued, that in developing the stakeholder concept from the point of view of universities, it can be draw on the detailed stakeholder theory for enterprises and also on the opinions of Donaldson and Preston (1995) and Jones and Wicks (1999), who argue that the stakeholder concept can be applied in other organizations (not only in firms). The success of the effective University's management will depend upon the commitment and participation of all University stakeholders. Given the effective management of the University necessarily requires the correct identification of who stakeholders are. Another possibility of reacing the University's effektivess is the analysis of the value creation, which is closely related to the stakeholder concept. Therefore, it is necessary to develop the University value creation concept. And the basis can lie in the works from the area of corporate value creation (Anand & Khanna, 2000; Bowman & Ambrosini, 2010; Lepak, Smith, & Taylor, 2007; Skilton, 2014).

Purpose of this article is to identify and classify the main stakeholders of the University assessing their value provided for the university. The article is written based on: 1) the literature review as a source for identification of critical parameters for stakeholder analysis and its implementation to heigher education sector; 2) the survey results analysis as a source for determination of the University's stakeholders created value for the University. The results of the research demonstrate that the stakeholder analysis is a good starting point for improvement of value creation to the University, which leads to the effective University's management.

The article is organized as follows. Firstly, it is reviewed the literature on stakeholder theory and stakeholder management as the basic resource. Subsequently, it is identified University's stakeholders and classify University's stakeholders from the point of view of their influence. Next, it is briefly reviewed the literature on value creation and identify relationships between stakeholders and value creation. Finally, we discuss the value creation for the Uiversity from starkeholder point.

1 Stakeholders from the point of view of Universities

An organization is characterized by relationships with many groups and individuals ("stakeholders"), each with the power to affect its performance and/or with a stake in its performance (Tetřevová & Sabolová, 2010; Jones & Wicks, 1999; Freeman, 1984). In practice, higher education institutions are characterised by the high level of autonomy enjoyed by their faculties, departments and even teaching and research staff in pursuing individual and institutional objectives (Mainardes, Alves, & Raposo, 2010). Tetřevová & Sabolová (2010) used Výrostová & Výrost term of the "University", where "University" is generally understood as a "higher education institution". In the broader concept, it is an educational institution providing high school graduates with tertiary education and further education (Tetřevová & Sabolová, 2010). Universities are of two types: private and public. What is more, the University as an organization from other organizations differ in certain specifics, as extensive multi-application effects and positive externalities, education as public goods, strict regulation; as for public universities, also absence of tuition fees, and almost 100 percents dependence on the state budget, limited financial sources. University provides bachelor, master and doctoral courses, as well as lifelong learning programs. The primary functions of contemporary Universities is concentrated on teaching, research, and community service (Haldma, Plooma & Lorenz, 2015; Marić, 2013; Tetřevová & Sabolová, 2010). Jongbloed et al. (2007) noted that the higher education institutions mission was expanded to stretch beyond teaching and research to include services to the community requiring partnerships be established with their surrounding communities and stakeholders. This means that University as an organization has to ensure the quality and effectiveness of both the research and education processes, to initiate successful communication with all the relevant stakeholders.

To implement the mission, also designated as "interest groups" or "constituencies", are "any group or an individual who can affect or is affected by the achivement of the organization objectives (Freeman, 1994); "any individual or group who can affect or is affected by the actions, decisions, policies, practices, or goals of the organizations" (Carroll, 1996); "an individual or group that has some kind of stake in what business does and

may also affect the organization in some fashion” (Buchholz & Rosenthal, 2005); “any constituencies in the organization’s external environment that are affected by the organisation’s decisions and actions (Robbins & Coulter, 2009). In general, stakeholders are those who may be affected by or have an effect on an effort.

Freeman (1984) argued that if organization wants to be effective, it has to pay attention to all stakeholders. The same view had and other researchers, like Jones & Wicks (1999). But Wartick (1994) and Tetřevová & Sabolová (2010) noted that stakeholders are not equal, due to this organization pay attention not to all stakeholders, but to more relevant stakeholders. This leads to the classification of stakeholders, which have different object of classification. The first classification was distinguished by Freeman (1984) according to cooperativeness and competitiveness. He used “generic” and “specific” grouping. Carroll (1996) distinguishes “primary” and “secondary” stakeholders, respectively “market” and “non-market” stakeholders according to the criteria of power and legitimacy. Other researchers classify stakeholders into „active“ and „passive“, „internal“ and „external“ (Rabinowitz, 2015), „actual“ and „potential“ (Starik, 1994). In case of the Universities, stakeholders may be classified as either internal or external, individual or collective, academic or non-academic (Mainardes, Alves, & Raposo, 2011). Despite all the classifications, the main groups of stakeholders are those without which the organization cannot survive as a going concern (Clarkson, 1998). In general, main stakeholders are shareholders, investors, employees, customers, suppliers, and public stakeholder groups (Friedman & Miles, 2006). Therefore, the higher education institutions have started using stakeholders too, in order to improve their field of work. There are numerous researches on this subject (Chapleo & Simms, 2010; Mainardes, Alves, & Raposo, 2010; Marić, 2013; Tetřevová & Sabolová, 2010; Jongbloed, Enders & Salerno, 2008). Mainardes et al., (2010) noted that various studies have attempted to set out a framework for the different groups that may influence or benefit from higher education without making any distinction between clients or publics of the institution. Table 1 presents the summary of the literature analysis.

Table 1 Summary of the literature analysis results of the University’s stakeholders

Core University activities	Stakeholders identified	Core stakeholders
Teaching	Students, teaching staff, researchers, administrative staff, institutional management society, government, companies and organizations, reserach and development partner comapnies, secondary level schools, research and development actors, private financiers, alumni, European Union, the Ministry of Education associations, sources of financing, the grant agencies suppliers of funding, sponsors, regulatory agencies, families of students, competitor universities, the course applicants, communities, media, owners (in private universities), other stakeholders	Students
Research		Teaching and research stuff
Relations with society		Comapanies/organizations employing students Society

Source: Own research results, 2016

The literature review on University’s stakeholders revealed the first finding. From the point of view of Universities, in the case of public university, core stakeholders are students, teaching and research staff, comapanies and organizations, empoying students, and society. In case of private University, the core stakeholders are the same, but they also include the owners. Hence, it can be concluded that identifying and categorising University stakeholders is a complex task (Jongbloed et al., 2008).

2 Stakeholders in value creation process from the point of view of Universities

It is generally maintained that Universities aware of their participants and understanding their expectations are better able to meet stakeholder needs, foreseeing threats and environmental opportunities and incorporating overlooked perspectives or marginalise restrictive factors (Mainardes et al., 2011). Meeting the needs of stakeholders is an important competitive factor for higher education institutions (Dobni & Luffman, 2003). Organisations must place sufficient emphasis on these stakeholders (Margerum 2002), as they can have an important effect on their success (Eden & Ackermann 1998). Williamson (1984) argued that a stakeholder’s stake is uniquely tied to the success of the firm and that management should make decisions for the benefit of all stakeholders. Correspondingly, on occasion, the different desires and needs of distinct stakeholders may enter into conflict and hinder strategies designed to effectively meet needs (taking into consideration the expected results) and efficiently (with the minimum level of resources) (Mainardes et al., 2011). Traditionally, Universities have focused their attention on the core stakeholders, in particular, professors, managers, funding administrators, donors, accreditation agencies and students. However, while these groups may be among the most important participant actors within a University level institution, an exclusive focus on these groups obscures other, and increasingly critical, circles (Burrows, 1999; Mainardes et al., 2011). Organizations cannot work in isolation, but must cooperate with others to achieve their wider objectives. An organization’s survival

and continuing success depends upon the ability of management to create sufficient wealth, value, or satisfaction for stakeholders (Clarkson, 1995).

According to Harrison and John (1994) and Freeman (2004), stakeholders' management is built on a partnering mentality that involves communicating, negotiating, contracting, motivating and managing relationships. The participatory process (or stakeholder management) means involving as many as possible of those who are affected by or have an interest in any project, initiative, intervention, or effort (Rabinowitz, 2015). An appropriate University's stakeholders' management leads to the process of value creation. From one side, the University manages its stakeholders, trying to satisfy their interests, needs and expectations, this means that the University creates value for the University's stakeholders. Rabinowitz (2015) claims that stakeholders' interests can be many and varied – related to economics, social change, work, time, environment, physical health, safety and security, mental health. Valančienė and Gimžauskienė (2012) developed the the framework of value measurement system, which indicates that the stakeholders' value can be expressed as economic, emotional and social satisfaction. Following a literature analysis of the value, it can be said that the organization (also and University) created value can be expressed as economic, functional, emotional and social value. Bititci, Martinez, Albores, and Parung (2004) noted that the value creation in collaborative organisations should be a win-win-win situation for all parties concerned. This means that not only the organization's (including University) stakeholders can get value from the value creation process, but also the organization (including University) can get value from the process of value creation (Koll, 2003; Valančienė & Gimžauskienė, 2012). The University stakeholders created value for the University can be expressed as economic value, functional value, emotional value and social value.

In most cases, involving all stakeholders to the process of value creation will lead to a better process, greater community support, a better understanding of the community context, and, ultimately, a more effective effort.

3 Research methodology

This research was conducted in two phases. The first phase consisted the literature review as a basis in identifying main stakeholders and its implementation to higher education sector. Publications on University stakeholders were searched for in scientific databases (e.g. EBSCO, Emerald, ProQuest, and Science Direct) and based on reference lists in the identified articles (i.e. snowball sampling). The literature analysis process started with reading the literature and screening for features that were similar and/or different. Such features included formal definitions, previous literature referred to in the article, methodology, and underlying assumptions about University stakeholders. These features offered a useful tool for investigating articles systematically. This article applies a "structured literature review", i.e. a formalized approach to analyze the existing literature (Schwarz et al., 2007). This approach was created for the EBSCO, Web of Science and Science Direct databases, using search strings with terms that relate to this research topic ("University", "stakeholders", "Stakeholder value", "Stakeholder value creation" and etc.). The journals included in the search were the most highly regarded IS (information systems) journals (As the selection criteria it was chosen a rating of 2 (B) or higher in the lasted ABS (Association of British Business Schools) Ranking). Additionally, relevant top-tier journals from related terms were included (Organization Science, Academy of Management Journal/Review, Strategic Management Journal and etc.). The time frame was set to the years 1995 – 2015. Furthermore, the "table of content" most relevant IS journals (Information Systems Research, MIS Quarterly etc.) was manually scanned. After collecting papers in this way, duplicates, book reviews, editorial notes, and papers that mentioned one of the search terms but did not actually examine these issues were removed. Also it was included papers outside of the search terms, books, and non-academic papers. The second phase consisted a quantitative methodology, based upon survey, for determining the main University's stakeholders and their created value for the University. This study was deemed necessary given the scarcity of empirical studies identifying and categorising University stakeholders and determining what value they create to the University. In this way, this research incorporated a quantitative methodology due to the lack of studies identifying stakeholders in Universities. One of the main objectives was to set out an initial list of stakeholders to render research continuity. The other objective was to set out the value and its types, which University stakeholders create for the University.

For this research was chosen one of 23 Lithuanian Universities. This study focuses on a single higher education institution. It is not uncommon in research studies to select a single case for purely practical reasons (Daymon & Holloway, 2004), especially if it is considered that that case has 'intrinsic value' (Stake, 1995), and is appropriate. Indeed, using a single case, with a grounded theory methodology, can be appropriate to building new theory. The respondents were chosen randomly with the only criterion being ensuring heterogeneity. The total number of respondents were 26. The survey was filled over the period between 5th Januray and 12th February 2016. The questionnaire was structured as follows: 1) the core University's activities; 2) the core University's stakeholders; 3) value types created for the University; 4) the general information.

This research makes a contribution to the value research field of higher education institutions in the context of stakeholders.

4 Data analysis

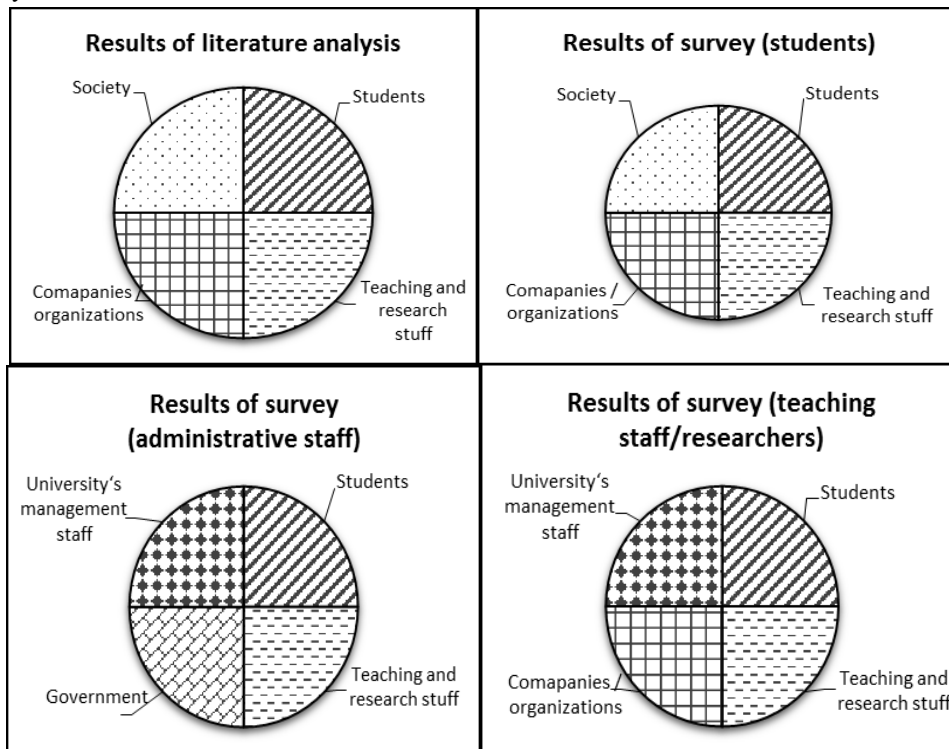
The survey, whose aim was to find out the main stakeholders of the University assessing their value provided for the University, was filled over the period between 5th January and 12th February 2016. The total number of respondents were 26. The prepared questionnaire for the survey disclosed the information about: 1) the general respondents' information; 2) the core University's activities; 3) the core University's stakeholders; 4) value types created for the University.

Table 2 Comparison of literature analysis results and survey results of the core University's stakeholders

Core stakeholders by literature analysis	Core stakeholders by survey results
Students	Students
Teaching and research staff	Teaching and research staff
Comapanies/organizations employing students	Comapanies/organizations employing students
Society	Government
	University's management staff
	Society

Source: Own research results, 2016

The survey results shown that the distribution of the respondents by gender was as follows - 7 men and 19 women of 26 respondents. Since the questionnaire was distributed to the University community, it was found that the distribution of the respondents by relation to University was as follows - 4 administrative staff, 6 teaching staff and 16 students. The survey results shown that the distribution of the respondents by age was as follows -16 respondents have to 24 years, 5 respondents have from 25 years to 30 years and 5 respondents have 31 years or more. These results shown that for the respondents' selection was ensured the criterion of heterogeneity.



Source: Own research results, 2016

Figure 1 Selection of the core University's stakeholders by different respondents

The literature analysis revealed that the primary activities of contemporary Universities is concentrated on teaching, research and service to society. All respondents the following activities in accordance with the importance of the University ranked as follows: teaching, research activities and activities (or services) to society.

The third part of the survey was to find out what stakeholders are of the greatest priority to the University. The literature analysis disclosed that various studies have attempted to set out a framework for the different groups that may influence or benefit from higher education without making any distinction between clients or publics of the institution. The list clarifies the complexity of Universities in identifying 28 distinct groups of the University stakeholders. This list of identified University's stakeholders was given to the respondents and they had to select the core stakeholders of the University. The survey results disclosed that the core University's stakeholders are students, teaching and research staff, companies and organizations, employing students, society, government and University's management staff. Table 2 presents the comparison of literature analysis results and survey results by identifying the core University's stakeholders.

The comparison results of literature analysis results and survey results by identifying the core University's stakeholders are different, due to the different groups of respondents' selection of the core University stakeholders (Figure 1). The literature analysis results disclosed that the core University's stakeholders are students, teaching and research staff, companies and organizations, employing students, and society. The survey results disclosed that the core University's stakeholders: 1) for students are students, teaching and research staff, companies and organizations, employing students, and society; 2) for teaching staff are students, teaching and research staff, companies and organizations, employing students, and University management staff; 3) for administrative staff are students, teaching and research staff, University management staff and government. The analysis results showed that the most frequently recurring University stakeholders are three, it may be come to the conclusion that the core University stakeholders are students, teaching and research staff, and companies and organizations, employing students.

The literature analysis revealed that the University's stakeholders created value for the University can be expressed as economic value, functional value, emotional value and social value. Table 3 presents the survey results by identifying the expressed University's stakeholders created value to the University.

Table 3 Summary of the survey of stakeholders created value for the University

Value	Value identified
Economic	Income, Invested capital, Investments, Funding for teaching, Funding for research, Project's funds attraction, Support from business, Cost reduction, Stable balance, Favorable tax system, Economic responsibility, Earned profit, Return; Value of the University.
Functional	Access to the latest research-based knowledge, Many fields of science, Using the most advanced infrastructure and advanced technology, Relevant business and social analysis of the problems and their solutions presentation; Dissemination of research results, Interdisciplinary study; Degree programs that meet the needs of the labor market; Employees performance results.
Emotional	Loyalty, Trust, Values, Reputation, motivation, Proud of being member of society/community/associations; Competitive advantage, Ethical responsibility; Philanthropic responsibility; Political stability.
Social	Relationships with organizations / associations; Diplomatic relations, partnership; Collaboration; Employers, students and faculty involvement in the organization of the study process; The development of sociability.

Source: Own research results, 2016

The survey results shown that respondents think that 1) the economic value created by the stakeholders for the University can consist of 14 multi-value dimensions (such as income, investments, funding for teaching, funding for research, and etc.); 2) the functional value created by the stakeholders for the University can consist of 8 multi-value dimensions (such as interdisciplinary study, access to the latest research-based knowledge, and etc.); 3) the emotional value created by the stakeholders for the University can consist of 10 multi-value dimensions (such as loyalty, trust, reputation, motivation, proud of being member of society/community/associations, and etc.); 4) the social value created by the stakeholders for the University can consist of 6 multi-value dimensions (such as relationships with organizations / associations, collaboration, employers, students and faculty involvement in the organization of the study process, and etc.).

An organization's survival and continuing success depends upon the ability of management to create sufficient wealth, value, or satisfaction for stakeholders, as they can have an important effect on their success, including effective stakeholders' management, ensuring value creation to both sides, a better process, greater community support, a better understanding of the community context, and, ultimately, a more effective effort.

4 Findings

The results of the data collected demonstrate that the traditional missions of a University are known and understood by the respondents, who are the part of University society. This finding is a point favourable to the stakeholder management of this University as the objectives prove to be common to everyone involved. The second finding of the article reveals that the concept of stakeholders is critical and difficult to implement everywhere and to everything. The stakeholder's concept, which fits in firms, also can be applied in other organizations, but the understanding of it is different. Indeed, the list clarifies the complexity of Universities in identifying 28 distinct groups of stakeholders making this type of organisation a managerial challenge. Given this, stakeholders need to be attributed priorities, with some prevailing over others, as it would seem impossible to attribute equal attention to them all (Jensen, 2002). The literature review on University's stakeholders revealed that from the point of view of Universities, in the case of public University, core stakeholders are students, teaching and research staff, companies and organizations, employing students, and society. In case of private University, the core stakeholders are the same, but they also include the owners. The other finding reveals that the core University's stakeholders (students, teaching and research staff, companies and organizations) create value as a benefit for the University. Stakeholders' created value for the University can be expressed in four dimensions, which reflect economic, functional, social and emotional aspects.

These findings allow to identify University's opportunities, benefits and barriers, which can influence the effective University's management for seeking to increase the University's value created by the stakeholders.

Conclusion

The article shows the complexity of problems in managing higher educational organizations in context of dynamics and its relation to the environment. Indeed, the list clarifies the complexity of Universities in identifying many distinct groups of stakeholders making this type of organisation a managerial challenge. Due to this, stakeholders need to be attributed priorities, as it would seem impossible to attribute equal attention to them all. Organizations in field of higher education also need to build a quality management system that respects the philosophy of value creation, and they have to deal with problems of how to meet all stakeholders' interests in order to create greater value for the University. Furthermore, the modality of stakeholders and value perceptions indicates the diversity and multidimensional environment that defines and determines a complexity of the University as an organization.

The quantitative nature of this research inherently represents one of the main research limitations. Despite the technique adopted enabling a better understanding of the nature of the problem under study, the interviews carried out focused only on one faculty of a state university that may limit the applicability of the conclusions reached. Another limitation relating to these results is that they derive only from one Lithuanian state University. The small sample of respondents involved in this study, doesn't allow assuming the results as definitive. Only a confirmatory research, involving a more representative sample can establish the definitive stakeholders of Universities. Nevertheless, the main contribution of this research refers to the value research field of higher education institutions in the context of stakeholders.

It would furthermore be important to continue this study by analysing other Universities. Probably greater differences may be expected in the results when a greater range of Universities are taken into consideration. However, the research developed in this paper shows relevance as it points to studies comparing different results of higher education institutions stakeholders' created value to the University analysis might prove a highly fruitful approach for future researches.

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**SECTION 7
OPERATIONS MANAGEMENT AFTER THE 4TH INDUSTRIAL
REVOLUTION**

*KNOWLEDGE MANAGEMENT FOR THE EVOLUTION OF SMART GRID
CUSTOMERS*

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Abstract

The paper presents some areas of knowledge management (KM) in smart grids which lead to the more efficient engagement of customers with new energy market solutions. One discussed part is customer education and the knowledge that can arise from different sources (not necessary connected to energy providers), such as dynamic experience and opinion sharing. The second issue deliberated is the problem of knowledge management in energy utilities, which, thus far, have primarily been focused on technical solutions, with little attention paid to consumers.

Purpose of the article The paper discusses the different types of KM platforms and presents a model of the process leading to customer engagement in energy market solutions. The model is focused on changing the supplier-customer relationship, as well as the activities of utility company, which possess the initiating role in creating active customer participation in new offers and programs.

Methodology/methods The research methodologies used for smart grid knowledge management platforms consideration is a review of the current literature and the author's own experience, gathered from European projects: Synergy+ and SEESGENT-ICT—both related to the design of smart grid platforms (Synergy + for SME project consortium supporting, SEESGENT-ICT for energy market stakeholders). The proposed model was created based on the results of a survey conducted in 2013 in central Poland. The main objective of the study was to assess the current attitudes of Polish residential customers towards the new energy demand programs and active energy market participation.

Scientific aim The first aim of the paper is to present the different perspectives for smart grid knowledge management platforms for smart grid customers. The second is to present the challenges of utilities towards finding new customer-centric ICT knowledge-based solutions.

Findings Utilities have to change their relations with customers. The demand for enhanced knowledge was confirmed by a local survey in central Poland. The important part of the process is the education of customers conducted by utility companies before and during the project of introducing new solutions (e.g. the installations of smart meters). A proactive information campaign can create greater customer engagement and avoid a negative reaction to pilot programs or regular Demand Side Management (DSM) offers. Passing on knowledge about planned activities and potential short term benefits to customers brings about greater interest in these changes and helps customers to move from passive to active energy market stakeholders.

Conclusions For energy utility companies, the transition to a new system is a huge, not only technological but also institutional, challenge. One of the conclusions that arises from the paper is that the new smart grid idea and its implemented technology require a new perspective on the company processes, linked to the delivery of services to customers, who are expected to be more active and become “managers” of both energy generation and consumption. Wide deployment of smart grid solutions will increase the need to educate customers and will force the utilities to implement a high level of knowledge management processes and systems.

Keywords: ICT, Knowledge Management, Process, Energy Consumer

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Introduction

The power network is in an evolutionary process of changing from a central to a dispersed system – the smart grid. Integrating new intelligent technology into the power network is one side of this complex process, but it is not enough to make the whole system, especially the utility companies, intelligent (Arends & Hendriks, 2014). The smart grid is changing the traditional ways of doing business in the energy sector into a customer-centric approach. This demands significant changes in the way utility suppliers and other organizations do their job of supplying energy. Changing to a customer-centric approach requires changes in the design of intelligent knowledge and strategies to motivate customers towards wider participation in the Demand Side Management /Demand Response (DSM/DR) programs, as well as further energy market activities. The technological changes in utilities, the customer's engagement, and in being "smart," must be harmonized. In order to meet these challenges, the learning ability of organizations, and their knowledge management should be considered crucial elements in linking technological and organizational changes in the energy sector (Arends & Hendriks, 2014).

Two main approaches can be distinguished in knowledge management (KM): the perspective of social practice (or the community perspective) and the ICT-based perspective (Hislop, 2010). The most common approach defines knowledge management as the management of knowledge processes within an organization, such as creation, application, retention and sharing. Knowledge management also considers the relationship between the corporation's knowledge and its practices (Spender, 2006). These approaches can be applied for the smart grid, as smart grid solutions are new and strongly dependent upon ICT applications. They demand new sets of data and information, and new processes of knowledge management. Working with smart grid technologies turns business processes into knowledge-related processes (Arends & Hendriks, 2014).

As a customer-centric approach and customer engagement plays a key role in the new energy market, different types of knowledge management platforms are now being developed by energy companies, software vendors, and other projects. Some of these are viewed as more technological and related to energy market management, with others offering certain types of knowledge management features. The smart grid has the potential to fundamentally change the social dynamics of the energy system, by offering solutions that are quite new, as new as is the idea of implementing broad smart grid solutions.

1 Knowledge Management software

Creating and sharing knowledge in an organizational system is often connected to the information systems domain, which can be defined as an explicit and persistent representation of knowledge accessible by an organization's employees (Dieng et al., 1999), and in the case of DSM/DR, customers as well. IT evolution and advancements of the Internet tied the growth of KM closely to communication technology. The application of IT that supports KM influences the results of knowledge collaboration within an organization, and in this way endogenous and exogenous knowledge can be managed by IT applications (Tseng, 2008). Most of the basic learning collaborative platforms are based on the Semantic Web model, and are designed with the optimal usage of Web 2.0 technologies, making it easier to create a social network. Such models combine individual learning and social processes. Organizing memory content through the form of ontologies, and linking formal and informal forms of learning in the same collaborative web platform can foster knowledge sharing (Abel & Leblanc, 2009). Knowledge sharing can be achieved through different activities in a range of ways. As an individual is the source of knowledge, therefore, some authors consider the advantage of Web blogs an easy to use way of knowledge sharing between individuals (Qun & Xiaocheng, 2012).

Web platforms designed for supporting organizational learning and sharing processes offer different functionalities, such as: social networks, content management, forums, but mostly without links between those tools. That is the reason why users do not have a global view of the whole aspect of problem solutions or discussions. The future energy smart grid, based on dispersed topology, forcing bidirectional power and information flow, will heavily exchange data to perform control and management tasks. The platforms designed for the energy market will have to solve the problem of interoperability of different devices, networks, and subsystems. A great deal of research has been done on this, mostly based on the Common Information Model introduced by the International Electrotechnical Commission (IEC). The CIM definition is based on a semantic model at the electrical level of the power system, describing components and relations, and, on a higher level, describing a smart grid process, such as billing or monitoring (Bonino & Procaccianti, 2014). Standards for smart grid solutions are created by different standardization bodies, like NIST (National Institute of Standards and Technology), but a unified, standard model has not yet been defined, meaning new proposals, such as ontology matching systems, helping to find complex correspondences between several terms, are suggested (Santodomingo et al., 2014).

2 Smart Grid Platforms

The power grid is moving towards a system where a physical and computational cyber infrastructure cooperates to deliver power in an efficient and reliable way, while, at the same time, changing the role of energy consumers. Moreover, the smart grid evolution must be technologically up to date, with customers at its heart, changing them into smart energy users. It is a big technological challenge, and yet, it is a possibility to change the social dynamics of energy systems. Both challenges require immense work in the area of technical solutions, as well as designing the processes and platforms for communication, and knowledge sharing between energy market stakeholders.

The smart grid is a relatively new idea for both business and customers. Knowledge management solutions are necessary in many areas, and there is a strong need to design, create and make useful technological, market, and educational platforms.

Several solutions from different platforms are now offered by a range of public and private organizations as well as international project teams. The effectiveness of this type of platform was tested and proved in a large number of pilot installations and commercial projects (Bertoldi, Hirl & Labanca, 2013).

The SEESGEN-ICT project has defined and promoted assumptions and recommendation for a web-based Demand Side Service Oriented Platform DSSP (Franchioni, 2011), which differs from typical web platforms. Like other platforms, it is designed to connect different users of large complex systems, but, at the same time, must respond to the key problems of the power system, and take into account the strategic aspects of the electricity supply and its infrastructure as well as environmental aspects. The main aim of the platform is to coordinate the exchange of services between the different stakeholders of the system, and to create the interface for the individual components, including electrical equipment (computers, home appliances, energy batteries, electric vehicles, etc.), RES, and Advanced Metering Infrastructure. These platforms have to coordinate two areas (Bertoldi, Hirl & Labanca, 2013):

- the physical layer, ensuring optimal and safe power supply as well as the energy and information flow between market participants,
- the energy market, providing efficient mechanisms for coordinated transactions between system operators, individual customers, aggregators, etc.

The number of different types of smart grid platforms with varied functionality will increase, as new solutions come to the market. As an example, gridmates (www.gridmates.com) - a crowdsourcing electricity platform intended to help eliminate energy poverty can be mentioned.

The market success of these platforms depends on the number of stakeholders (mainly residential customers and prosumer communities) involved. The more consumers that join the platform, the higher its business value. The basic rule is to ensure all members gain tangible benefits, to introduce safety policies and data protection, and the principles of open access and fair competition between the actors of the energy market.

2.1 Knowledge sharing platforms – the energy market stakeholder perspective

Greater consumer understanding and engagement in Energy Efficiency and Demand Side Management programs together with massive RES generation represent one of the basic smart grid ideas. Change in customer energy-related behavior is necessary for the new energy market. Understanding consumer choice, education, and segmented offerings of basic services appears to be one of the crucial successes for wide customer acceptance of new solutions. Creating customer involvement in energy-related programs is a complex process, which requires the coordination of many activities, including changing the attitude of suppliers, consumers, government agencies and community organizations. While modelling these actions, one must take into account the study of customer motivation, available legal solutions, support programs and business benefits for all participants in the energy market.

Knowledge sharing platforms are provided by many organizations, most of which combine basic areas of the smart grid with other smart city areas such as smart transport, smart buildings, smart jobs, and consumers. An example is The Energy Smart Communities Initiative (ESCI) platform (esci-ksp.org), which, as one of its components, offers the Knowledge Sharing Platform (KSP), a tool for collecting and sharing best practices for creating energy smart communities, designed to aid in cataloguing and sharing information and best practices. It presents an opportunity for researchers, scientists, academics, and the general public to learn, engage, and share the latest in sustainability and energy efficiency. A similar platform is offered by the Smart Grid Consumer Collaborative (smartgridcc.org), a non-profit organization intended to be a trusted source representing consumers, advocates, utilities, and technology providers in order to advance the adoption of a reliable, efficient, and secure smart grid, and ensure long-lasting sustainable benefits for consumers.

In Europe, one of the examples concerning SME participation in SG projects was the SYNERGY+ 6 EU fund project. The project's full title was: Expanding Competitive Intelligence in the European Distributed Energy Resources Sector. The idea of the project was to create a place – a web portal called Competitive Intelligence Web Service - where SME managers could find knowledge, join a project consortium, take part in new projects, or find financial investors for their ideas (<http://seesgen-ict.rse-web.it>). As the owners or managers of SMEs are usually heavily involved in their normal activities and administrative work, the project offered them training to help understand Distributed Energy Resources innovative markets and technology needs in that sector. To support SMEs and give them the best available information on economic, legal, social, political, and technical issues, project partners create easily-assimilated pieces of information, called “Knowledge Pills”, accessible through the Web Market Place. As European Technology Platforms play an important role in the process of creating an information society in Europe, and focus on strategic issues where future growth, competitiveness, and sustainability depend on technological progress, a link was established between the project, as a representative of SMEs in the DER sector, and certain European Technology Platforms. A web link to each of these ETPs was created on the SYNERGY+ Market Place. The knowledge database was continuously fed by the expert group of the consortium, with a few thousand “Knowledge Pills”. As one of the project's results, 90 SMEs were newcomers in European project proposals (<http://seesgen-ict.rse-web.it>).

There are many other portals devoted to smart grid and smart city solutions, but it is beyond the scope of this paper to present them all. What can be observed from other businesses is that social marketing appears to be very effective, especially for particular generations of consumers or market segments, perhaps even more effective than a personalized e-mail. This also applies to energy consumers. Portals and platforms concerning ecological issues have become a source of knowledge and a place to start business contacts in the area of SG.

2.2 Customer perspective

There is a lack of knowledge and a strong need for education about smart grid among residential customers, which was proved by several studies conducted by different organizations (e.g. SGCC, Accenture, A.T. Kearney). This was also confirmed by a local study in central Poland, conducted in 2013. The main objective of the survey was to find out what the level of knowledge and perception of Łódź region energy consumers was towards smart grid solutions (Pamula, 2014). The results of the study showed that the educational needs of the surveyed respondents were very high. The number who answered “no opinion” while assessing the benefits and potential threats of SG was around 50%. As the most preferred ways of education, the respondents chose radio or TV programs (66.67%), and dedicated web portals (61.87%). One of the conclusions of the research was that if the energy customers had more knowledge about the benefits of SG, they would be more eager to take part in new utilities' market offers.

Giving the customer knowledge about possible actions and informing them of the results of decisions taken are main factors for instant engagement into Demand Side Management programs. Customer knowledge can come from many sources, starting from education and information campaigns, through materials prepared by energy providers, to home appliances and RES installations producers. Customers may also search for information through different web pages and portals not directly connected with energy distribution or generation and their interest is raised when a support system is offered.

Apart from knowledge on how the energy system changes, customers will have to know how to manage and optimize energy consumption. The smart home concept assumes an internal communication network, intelligent control, and home automation, as well as integration with external information for interaction with different entities, such as energy aggregators or utilities (Fernandes, Morais, Vale & Ramos, 2014). The complexity of House Management Systems will increase support for other optimization processes, helping the customer to minimize energy bills or optimize energy consumption by choosing the best demand response events. As user profiles, covering house residents' energy behavior, play the most important role in these processes, the platforms for data acquisition and house appliance control systems enabling automatic participation in demand response events must be applied (Fernandes et al., 2014).

The study conducted in April and May 2013 in central Poland – Łódź Region, covered important aspects of the electricity supply, customers' assessment of the performance of the existing relation with the utility company as well as the acceptance and expectations of new smart grid solutions. The sampling method adopted was not a probabilistic one, but 271 properly completed forms out of 600 sent were returned, giving a valuable observation. The sampling method used in this study had a number of limitations and the results are not representative and cannot be generalized to the entire population or even the residents of the Łódź region itself. However, due to the fact that an acceptably large number of completed questionnaires were received, valuable empirical data was obtained, showing household preparation for the introduction of new solutions of active participation in the energy market. The first part of the survey concerned the perception of potential benefits of

implementing new solutions. More than 50% of respondents showed ‘no opinion’, and a small number of respondents left this question unanswered. This means that actual knowledge about possible SG solutions is quite low, and new educational programs are necessary for wide deployment of new energy management solutions. The largest group of surveyed consumers, more than 50%, considered the ability to accurately track energy consumption (thereby saving energy) a benefit, which confirmed the importance of communication and energy action feedback as an essential part of changing customer energy-related behavior (Pamula, 2014).

A part of the survey was designed to find out how customers evaluate potential ICT solutions in the area of SG software and platforms. The research was conducted using the following assessment scale: ‘very important - can pay for it’, ‘important, but should be free of charge’, ‘not important’. The study results showed that the most important solutions for the respondents were the ones concerning data security and privacy issues. The largest group of consumers, more than 71%, pointed to data security and privacy aspects as the most important aspect, with 16% expressing their willingness to incur additional costs for these functionalities. Compared to international research conducted by Accenture in 2012 (Accenture, 2012), the respondents showed significantly less interest in automatic connection with social media portals. The Accenture research showed that more than 50% of surveyed customers preferred this communication channel to track the complaint status or to be informed about power outages, while 47% would like to join the discussion on how to reduce energy bills and optimize energy usage. In the Łódź Region, almost 55% of respondents perceived this function as not important, with only 3.2% being ready to pay for such a possibility, although for more than 39% it was an important functionality. Some of the results of the issue’s analysis are presented in Table 1.

The customer response to signals sent by the Demand Side Management program is connected to energy-related behaviour, such as switching on/off certain appliances. The majority of residential customers are not willing to control the devices manually, they would rather delegate the decision-making process to automated systems. In the conducted research, 47.03% of surveyed respondents preferred an automated decision process, almost 8% expressed the willingness to take this type of action once a day, and about 35% - 2 to 4 times a day.

Table 1 The preferences of ICT solutions

Feature	Very important - can pay for it	Important, free of charge	Not important
Data security and privacy	15.98%	71.00%	11.64%
Remote control of home devices (e.g. air conditioning or heating)	11.42%	66.21%	20.78%
Ease of use for all family members	9.13%	73.29%	16.44%
Access to the system from anywhere, at any time, from any device	8.22%	60.05%	29.91%
Easy to use help system	8.22%	75.80%	14.84%
The ability to create different analyzes (e.g. power consumption of the refrigerator over a year or month)	7.08%	60.05%	31.51%
Selection between manual or automatic control of home appliances	6.39%	72.60%	19.63%
Open standards and protocols	5.94%	55.94%	35.62%
Possibility to customize an interface	5.25%	50.00%	42.69%
Data visualization and data mining of energy usage	5.25%	55.25%	37.44%
Attractive system interface	5.02%	46.58%	46.35%
Software installation not required	4.11%	65.75%	28.77%
Connection to social media portals	3.20%	39.04%	55.48%
Possibility to compare energy usage results with others	2.51%	49.54%	45.89%

Source: Based on survey results

Smart grid technologies are innovative, strongly IT-dependent and novel for residential customers. Although most research shows that consumers perceive a great number of risks in connection with the adoption of a new SG technology (like losing control of energy supply or data privacy), they are interested in new energy market solutions, mainly in its financial aspects and electricity bill control, which was also proved by local research (Pamula, 2014). The results of many other researches show that more and more customers are interested in the

environmental aspect. New models of acceptance of SG technology suggest that individuals are only likely to accept it if they assess the usefulness as a positive impact for society and the environment (Broman, Schuitema & Thøgersen, 2014).

Knowledge sharing platforms should be designed as suppliers independent platform, becoming Energy Customer Competence Center Platform focused on residential energy customers' needs. Such a platform shall be a trustworthy place of knowledge, gaining experience and assistance in energy-related decisions. The services offered by platforms should help energy market stakeholders optimize decisions triggered by changes in the market, provide an educational process and help assess market offers. This type of platform is supposed to play the role of:

- A knowledge and competence center,
- A place of exchanging experiences (taking into account different aspects such as: DSM and EE programs, Energy Suppliers, devices, RES, etc.),
- An education center - collecting different types of educational materials, on-line courses, and virtual games helping to understand SG ideas,
- A support center for energy-related decision making - providing different services such as: comparing offers of DSM & EE programs, solutions for intelligent house management and RES energy production (for individuals and prosumer groups).

For a great number of customers, the most important issue is information on how they can use and how they can benefit from the new energy system, so knowledge seems to be one of the most important factors in its successful implementation.

2.3 Utility perspective

Modern organizations are moving their CRM relations into customer knowledge management, which is especially important in the case of prosumption, and requires the creation of a special strategy of knowledge acquisition and collection. The design and implementation process of consumer knowledge management must be connected with the concept of knowledge synergy: "about a customer", "for a customer", and "from a customer" (Ziemba, 2013). Usually, the knowledge "about a customer" and "for a customer" is gathered in CRM and KM systems, while the knowledge "from a customer" demands a new model, including the knowledge of the prosumption process. This model should include customers in the whole process of the exploration and creation of knowledge throughout the product life cycle. The model should cover knowledge on the communities of learners, sharing knowledge of the organization's staff and customers, as well as the knowledge derived from experts and knowledge of the market for innovation.

Power companies face many challenges, for example: privatization and changes in corporate partnerships, changes in legislation and government policies, and moving the power systems towards a more dispersed, green, energy-driven solution. Changing to the smart grid means changing the business from an energy selling one to an energy saving one, which implies changing the passive customer into an active one who adopts new technologies, new market offers, and other solutions. There are many works and papers considering the individual level of innovation adoption, such as; the Theory of Reasoned Action or Theory of Planned Behavior. IT innovation diffusion and adoption was also broadly examined, from the Technology Acceptance Model (TAM), introduced in 1986 (Davis, 1993), to many other theories (Jeyaraj et al., 2006).

Residential customer engagement into new energy markets seems to be a long-term process, requiring the creation of an appropriate strategy, detailed planning, and integration with other plans and activities of a company. The role of initiative in changing the customer's energy-related behavior and making them an active participant in new energy markets is left to the energy supplier. It is in the interest of energy suppliers (who want to reduce energy demand during peak periods) to convince consumers about and highlight the benefits (for both parties) of such actions. Therefore, the existing model of the supplier-customer relationship must be transformed, taking into account the active customer role necessary in new energy markets. Changing the supplier-customer relationship and increasing communication is essential for massive deployment of Demand Side Response programs, because it is not enough to convince the customers to enter the program - motivation for continuous actions is needed (Pamula, 2014).

The proposed model is focused on the following issues:

- supplier – customer/prosumer relations,
- the process of finding motivational factors determining customers/prosumers activities,
- the process of the development of Demand Side Management/Demand Response offers,
- the segmentation process and targeting offers to groups of customers according to their preferences,

- the education system and promotion of new Demand Side Response programs and Energy Efficiency programs.

Successful energy supplier activities, leading to strong customer engagement, can be carried out by energy suppliers through collaboration with social organizations (especially those in the local area that have a high level of customer confidence) and government authorities, taking into account the coordination of different Energy Efficiency programs conducted on national and regional levels (Pamula,2014).

The proposed customer engagement in the SG process assumes that a process should take place at the same time both within the organization and outside, by building a relationship with the environment, and, in particular, by incorporating the customer into the introduced energy system changes.

A proposal for customer engagement into the smart grid solutions' process is shown in Figure 1. As the customer's role in smart grid changes from passive to active, leading to their full participation in the energy market as a prosumer – a member of the local prosumer community, so the relationship will also evolve.

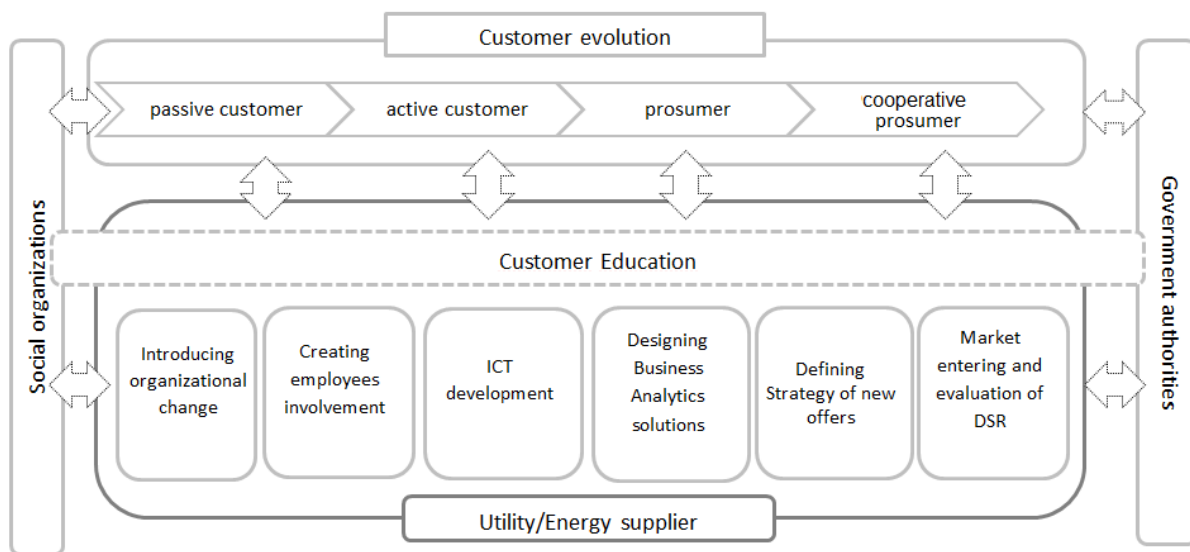


Figure 1. Customer evaluation and engagement in the smart grid solution process

The process consists of six steps, which should be carefully designed taking into consideration customer evolution and changing needs.

Introducing organizational change - organizational changes should be designed to transform the utility from its current type of company, with limited communication with the customer, to an organization in which the client is the key element of the business process. During the planning stage, customer feedback and preferences must be taken into account. While the customers are evaluating, the relationship between supplier-customer will change into a business partnership. The utility will have a unique opportunity to create a type of network organization with both customers and prosumers, but to achieve this goal, new services and new structures to support all the stakeholders must be prepared.

Creating employee involvement - changing the supplier-customer relationship will require all employees to treat the customer as a partner in the business model who is responsible not only for their response to DSM program signals, but involved in the creation of company profit. As utility employees are the first line of contact with customers, designing a parallel process for the engagement of employees and customers is important.

ICT development - strong investment in technical as well as ICT infrastructure is necessary, due to the fact that the current information system structure is not well suited to massive customer participation in the energy market. Information systems and platforms should be designed in cooperation with residential customers, as this fosters a better chance of acceptance. In this case, customers may become prosumers, partners in the process of creating an information system and platform used by both sides.

The utilities can design and create their own customer engagement platforms, but there are some commercial platforms offered by a range of providers. One such solution is the Customer Engagement Platform by Opower, a company which is the leader in cloud-based software for the utility industry. This system offers deep analytics and automation capabilities as well as the possibility to launch an open ecosystem for partners.

The functionality of information systems and platforms dedicated to the energy market, home energy management, and prosumer communities, is described in many projects (Timmerman, 2013). The prosumer community may either use the platform offered by the utility, or choose another market solution. The correct interoperability between different systems is crucial for accurate information and energy exchange.

Designing Business Analytics solutions – understanding customer energy-related behavior is a basis for the segmentation of customers and targeting DSM offers. A great deal of data will be gathered via Automated Metering Infrastructure and other information systems. Business analytics solutions should collect all the knowledge about customers, and help discover their motivation in order to create individual and group profiles. The scope and availability of gathered data determines the quality of the analysis and the effectiveness of the offers, targeting and making a profit simultaneously. It is important to identify potential data sources and the methods of collecting data from them. The basic sources that should be considered are:

- the customer – data can be gathered using survey methods, a voluntary detailed “inventory” of home appliances,
- customer activity logs on utility portals or CRM,
- data gathered in information systems like billing, orders, complaints,
- data collected by smart meters and Automated Metering Infrastructure,
- commercial data banks.

Data from different technical and business categories are required to create a customer energy-related profile. To monitor customer engagement in DSM programs, it is essential to record data related to a particular program or service DSR, such as access time, period, motivation, detailed customer response to DSR signals, the results of actions taken and the reason for termination.

KM system designed for the purpose of business analytics should be understood as something more than just a CRM system for residential customers.

As customers evolve into prosumers, the analysis should be extended, examining the effects of entering new energy sources into the electricity network and expanding the prosumer profile with data about energy generators. Analytical models in this case should include risk analysis of prosumer market activities. Furthermore, with an increasing number of prosumer communities, analysis of actions taken by prosumer groups, relations between communities and other stakeholders, determination of segments, and determining the risk of market operations, are necessary. In order to maintain business relationships with groups of prosumers and create new business relations, it is important to explore their main motivators, and discover the relations that make the greatest profit for the utility.

Defining a strategy of new offers – the current system is very simple and offers just a limited number of tariffs. The DSR tariff system can be far more complicated, meaning it will not be easy for the customers to understand and choose between them. To avoid customer shift away from DSM programs, a strategy of introducing them into the market should be developed in coordination with other programs (e.g. Energy Efficiency) provided also by other organizations. Such a solution can strengthen synergy and customer motivation (York, Kushler, 2005). Gathering customer responses and preferences of additional values and services will play a crucial role in this process.

Market entering and evaluation of DSR – is a crucial but complex process for massive customer engagement. It should be correlated to and follow a strategy. Utilities usually start this process with pilot installations. Successful adoption by customers begins commercial deployment. Several researches have shown that local conditions have a strong influence on customers’ decisions. The acceptance of DSM/DR programs may be determined by certain local factors associated with the awareness of the sub-population, infrastructure, or local politics. Therefore, the segmentation process for the introduction of new SG solutions should be conducted locally and in a cyclical manner.

3 Discussion

This paper is limited to certain areas of knowledge management, as it relates to the changing role of energy customers in smart grid conditions. In response to the smart grid vision, several ideas and proposals of intelligence platforms were developed. For energy control and information management, many of them introduced Artificial Intelligence techniques, with multi-agent architecture and the application of semantic technology. The number of examined smart grid knowledge management platforms is limited to this chosen project only, based on literature access. Examples of such platforms presented in the paper are mainly illustrative and do not represent recommendations of technology vendors. Smart grid solutions change not only the process of power supply, but also reconfigure social relations, where energy customers use certain information via web-based platforms to build shared communications.

The proposed model is based on current energy providers' activities and described on the highest level. The model emphasises that while designing the strategy for prosumers and communities, the policies of local administrative governmental authorities' activities that support green energy should be considered. It is clear that increasing the number of prosumer clusters will encourage the creation of new services and business models of cooperation.

Conclusion

The results of many studies carried out across the world show the necessity of knowledge management for smart grid customers. A survey conducted by Utility Dive Brand Studio in 2015 on how utilities educate residential customers about energy efficiency, demand response, demand-side management, renewables and distributed energy resources, has shown that there is strong pressure not only on measured return on investment but effective education programs as well (Utility Dive Studio, 2015).

For the energy utilities, the transition to a new system is a huge, not only technological, but also institutional, challenge. One of the conclusions that comes from the paper is that the new smart grid idea and implemented technology requires a new perspective on company processes linked to the delivery of services to customers, who are expected to be more active and become "managers" of energy generation and consumption. Wide deployment of smart grid solutions will increase the educational needs of customers and force the utilities to implement a high level of knowledge management processes and systems.

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*TRADITIONAL VS. MODERN PROJECT MANAGEMENT METHODS.
THEORY AND PRACTICE*

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Abstract

Purpose of the article The purpose of the article is to investigate the relationship between traditional project management (TPM) and modern project management (MPM), with a special focus on agile project management (APM). Moreover, the results of the studies on the application of APM in non-IT companies are presented.

Methodology/methods Based on the literature review, the descriptions of TPM and MPM methods are given. Furthermore, the questionnaire-based survey is applied to obtain relevant knowledge on the application of APM methods in the non-IT companies.

Scientific aim The scientific goal of the article is to ascertain the prerequisites for applying the TPM and MPM methods in the organisations, with a special focus on non-IT companies. Moreover, the conducted survey shed some light into the current state of application of APM methods in non-IT companies.

Findings The TPM methods have been developed since the sixties and are suitable for application in large, long-term projects in a stable environment. The prerequisite for their application is the ability to plan, in detail, the project ex-ante, while MPM methods seem to more accurately match the client's needs, especially if the requirements have the tendency to change frequently over time. However, the result of the study showed that the application of APM methods is very limited, even if the companies reported that they mostly operate in turbulent environments.

Conclusions The MPM methods, with a special focus on APM, are a good alternative for non-IT companies seeking new ways of managing projects in a turbulent, client-oriented environment. However, the results of the studies revealed the limited application of APM methods in non-IT companies. They outlined directions for further research that should try to answer what hampers APM application in non-IT companies. Moreover, research dedicated to select industries should be performed.

Keywords: TPM, APM, APM, traditional project management, modern project management, agile, survey, company, non-IT, waterfall.

JEL Classification: M2, M11, M21, O31, O32,

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Introduction

Project management, as a scientific discipline, has been developed since the 1960's (Kerzner, 1987). At that time, projects were largely independent endeavours with a relatively long implementation period, calculated in months or years. Their level of complexity was usually high and, therefore, budgetary concerns were a significant factor. As a result, the main effort was put into the detailed planning of tasks and then controlling the implementation of the projects in relation to former assumptions (Kerzner, 2013; Wyrozebski & Spalek, 2014). The waterfall approach was widely applied in the running of projects (Ji, Sedano, & Ieee, 2011). Hereinafter, this way of managing projects is assumed to be traditional project management (Hebert & Deckro, 2011; Pellegrianni, 2011; Robichaud & Anantatmula, 2011; Saynisch, 2010; Spalek, 2015).

The turn of the century brought new challenges as the number of projects significantly increased, creating multi-project environments in companies (Formentini & Romano, 2011; Hofman, 2014; Spalek, 2012a). In the search for new ways of dealing with that situation, the concept of project management office (PMO) was introduced (Hobbs & Aubry, 2008). PMOs were established to play different roles, e.g. improving industrial engineering (Spalek, 2013), brokering knowledge (Pemsel & Wiewiora, 2013) or supporting innovations (Artto, Kulvik, Poskela, & Turkulainen, 2011). However, despite their broad-serving purposes, PMOs, as a new organisational structure, were not able to address all the challenges that companies face nowadays. The turbulent, global environment put additional pressure on companies to significantly reduce the time spent on the development of new products (Kach, Azadegan, & Dooley, 2012; Relich, 2015; Spalek, 2014b) and to customise their services to clients' needs (Gil, 2009; Liberatore & Pollack-Johnson, 2013). Moreover, companies started to more carefully calculate their level of investment in project management (Rudzianskaite-Kvaraciejiene, Apanaviciene, & Butauskas, 2010; Spalek, 2014a). As a result, new methods of managing projects had to be developed, which are hereinafter referred to as the modern project management approach (Curlee, 2008; Shenhar, 2001).

The purpose of this article is to discuss the major characteristics and highlight the key differences between traditional and modern project management methods. Moreover, the results of the empirical studies should allow one to glean insight into the application of modern project management methods in company practice.

1 Traditional vs. Modern Approach to Managing Projects

Although traditional project management methods are well established, having been developed over a long period of time, it seems that they are no longer sufficient to overcome the challenges that companies face nowadays, regardless of their country of origin (Spalek, 2014d). The shorter time- to- market demand, cost-cutting tendencies and increasing pressure on innovations are of high interest in companies. Moreover, this tendency will most likely strengthen in the future and traditional methods like the waterfall approach, with detailed ex- ante planning of costs, time and scope, are not flexible enough to meet the expectations of the turbulent environment they operate in.

The traditional project management methods are focused on work- breakdown structures - WBS (Zhang, Wang, & Zhan, 2013), Gantt charts (Eppinger, 2001) and detailed budgeting, including the earned value technique – EVT (Goh & Hall, 2013). Moreover, the triple constraint idea (time, money, scope) prevails in managerial projects' practice (Basu, 2014). Furthermore, project managers should monitor and control the outcomes against the plan in the following areas (PMI, 2013):

- Project Integration Management
- Project Scope Management
- Project Time Management
- Project Cost Management
- Project Quality Management
- Project Human Resource Management
- Project Communications Management
- Project Risk Management
- Project Procurement Management
- Project Stakeholder Management

Several tools and techniques, like the critical path method – CPM (Kim & de la Garza, 2005), or program evaluation and review technique - PERT (Makhloof, Waheed, & Badawi, 2014), have been developed to support the traditional project management approach. The set of traditional methods is also successfully used nowadays

(Shen, Smith, & Ahmed, 2010). However, their application is limited to certain types of long-lasting endeavours which run in stable environments.

The birth of modern project management can be traced back to the year 2001 when Agile Manifesto was proposed (Erickson, Lyytinen, & Siau, 2005). The basic idea came from the software development sector and some other industries are now trying to adopt it (Conforto, Salum, Amaral, da Silva, & de Almeida, 2014). The set of modern methods in project management includes, but is not limited to, SCRUM, XP, LEAN, TDD, ADD, SOLID, Pair programming, RUP, ASD, APF, DSDM (Dyba & Dingsoyr, 2008; Fitzgerald, Hartnett, & Conboy, 2006; Gary et al., 2011; Polesie, 2013; Santos, Flentge, Begin, & Navarro, 2011)

R. Wysocki (2011) distinguishes the Linear, Incremental, Iterative, Adaptive, and Extreme models in project management life cycles and positions them over the Traditional, Agile, Extreme and Emertxe approaches in Project Management. At present, agile project management (APM) is of the utmost interest to scientists and practitioners alike, as it can cover a wide range of activities in the organisation. Therefore, APM receives detailed treatment in the article through extensive deliberations.

APM, at its core, is oriented around the client's needs and finding ways of meeting the client's expectations as a key concern in the project outcomes. APM sees small project teams working closely with the client in order to tailor the product to his or her needs. That approach allows businesses to not only react quickly to oftentimes rapidly changing client needs but also to respond to the shifts coming from the turbulent environment. An overview of the key differences between traditional and agile project management is shown in Table 1.

Table 1 The key differences between traditional project management (TPM) and agile project management (APM)

Area of interest	TPM	APM
Basic assumptions	The product can be fully described at the planning phase of the project	A high quality product is worked out by small specialised teams on a continuous improvement basis.
Management style	Autocratic, Prescriptive	Affiliate, Democratic
Knowledge management	Explicit	Tacit
Communication	Formal	Informal
Organisational structures	Bureaucratic, Highly formalised	Flexible, Cooperative
Quality control	Planned in time in details	On-going control of the achieved sub-results toward the client's expectations

Source: Dybå, Dingsøy 2008, s. 833-859; Serrador, Pinto 2015, s. 1040-1051

Although APM receives a lot of attention, there is an ongoing discussion on its actual contribution to the success of the company (Serrador & Pinto, 2015), and the ability of companies to run projects according to the agile rules only. Therefore, the newest approach sets out to incorporate some elements of agility into traditional project management or, while running big, complex programs with TPM, tries to extract from within the program, some projects which can be implemented with pure APM methods. The latter approach seems to be attracting an increasing number of supporters in the academic community. However, there is still some confusion as to if and to what extent APM is appreciated by the companies in their managerial practice, with a special focus on non-IT sector firms. The reason for focusing on non-IT companies is that APM was developed for IT project purposes and IT firms are strong proponents of APM, while some scientists see the potential for APM application outside IT-based enterprises.

2 Traditional vs. modern project management methods in practice

There is a plethora of evidence that TPM is widely recognised and applied in companies' managerial practice in many industries besides IT, like R&D (Chandrasekaran, Linderman, & Schroeder, 2015), governmental (Young, Young, & Zapata, 2014), transportation (Tian & Demeulemeester, 2014), construction (Almahmoud, Doloi, & Panuwatwanich, 2012), higher education (Neverauskas & Stankevicius, 2008; Spalek, 2012b) or power (Tan & Wang, 2012). In addition, the success factors of APM are also widely discussed (Mueller, Gerdali, & Turner, 2012; Spalek, 2014c). Nevertheless, evidence of APM applications in non-IT industries and related success factors are very limited (Conforto, et al., 2014; Serrador & Pinto, 2015).

A recent study conducted by A. Komus (2012) on 236 mostly German (65%) companies, revealed that Agile methods are mostly (65%-81%) applied in IT- related activities. However, only 16% of the entire sample applies purely Agile constructs, whereas 3% are represented by non-IT projects. Although, when it comes to a mixed TPM-APM approach, the percentage is slightly higher, but IT projects still prevail in different TPM and APM combinations. The study (Komus, 2012) showed that the application of agile methods in non-IT industries is developing but there is still room for improvement, a fact which inspired the author to investigate related matters further.

The study on agile management practices

To plug the gap of knowledge on the application of the agile methods in the industrial environment, the survey was undertaken. The study was conducted in 2015 and its goal was to put the spotlight on agile practices, with a special focus on non-IT companies. The research method was questionnaire-based and it consisted of metrics (gathering the data on the participating companies) and, in the second part, its goal was to answer the research question (RQ): whether there is knowledge and application of agile methods in the industrial environment. The survey addressed select companies already practising the traditional project management methods and running several projects a year for at least five years. As a result, 30 questionnaires were received, out of which 27 were dedicated to non-IT projects. The project revolved around the following areas: production/technology, energy, mining, construction, transport and logistics, trade, pharmaceutical, telecommunication, consulting, finance and banking, media and advertisement, public administration, non-governmental organisations, insurance, tourism and sport.

80% of interviewed companies were medium and large ones, employing more than 50 workers. 70% of them indicated that their business environment is turbulent. Moreover, the intensity in managing projects, understood as the number of projects run by the companies in comparison to all companies forms of activity, was measured. The study showed that the majority (43%) claimed to have a *large* intensity – meaning that the number of projects in the company is significantly high, supporting key company strategy. 20% indicated that intensity is *very large* – as the projects are the key activity of the company (project- oriented organisation). Furthermore, 20% reported that projects are significant for the company, which is assumed to be *medium* intensity. Only in 17% of cases was the intensity *small* – incidental, a few projects run by the company (Figure 1).

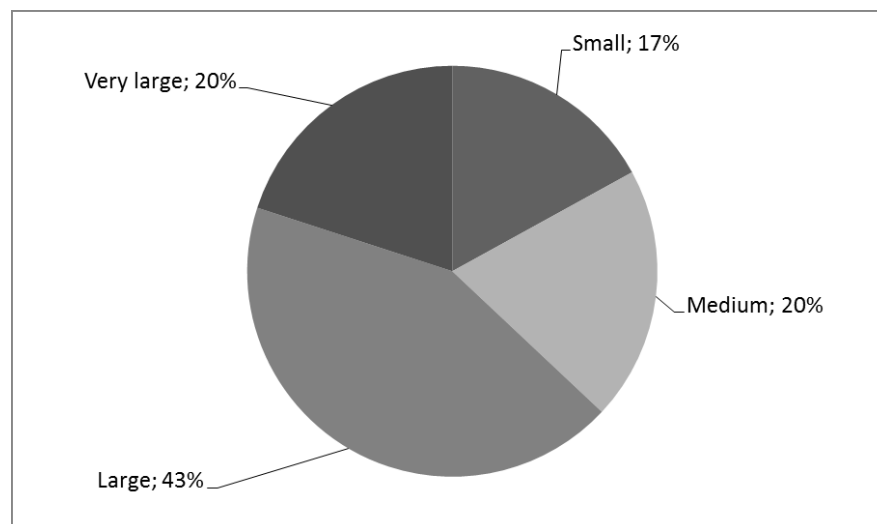


Figure 1 The intensity of projects in the surveyed companies

The interviewees were asked if they had heard about agile project management methods. The vast majority (70%) answered no – they did/do not know this term at all. 23% of them had heard of the term but had no idea what it is about. Only 7% knew the term agile project management, but none of them had a good knowledge of it (Figure 2).

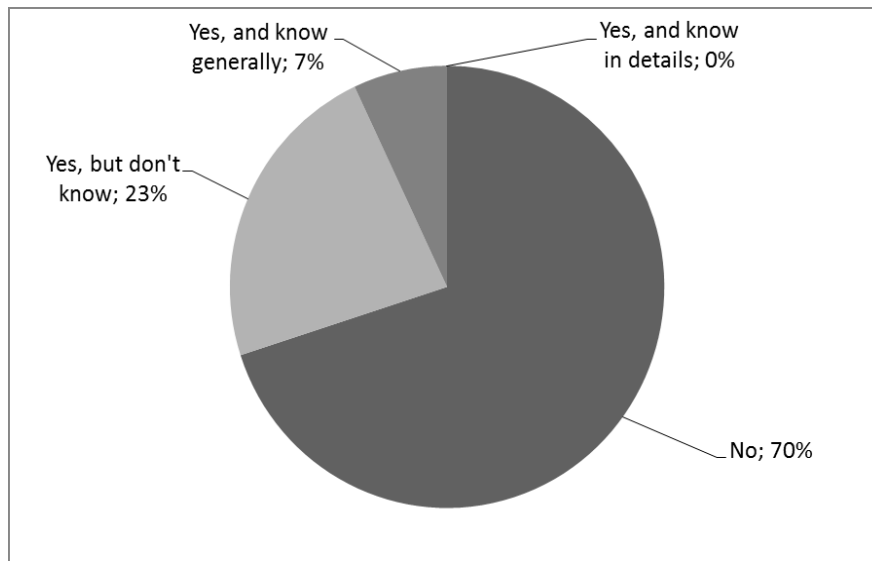


Figure 2 Survey answer of the question: Have you heard about agile project management?

Furthermore, the respondents were asked if their organisation applies agile project management methods in practice. 40% of them indicated that they do not apply APM in their company, 7% admitted to doing it sometimes and 3% mostly. None of the organisations reported the application of APM to all projects. Moreover, 50% of respondents didn't know if the company applies APM methods (Figure 3).

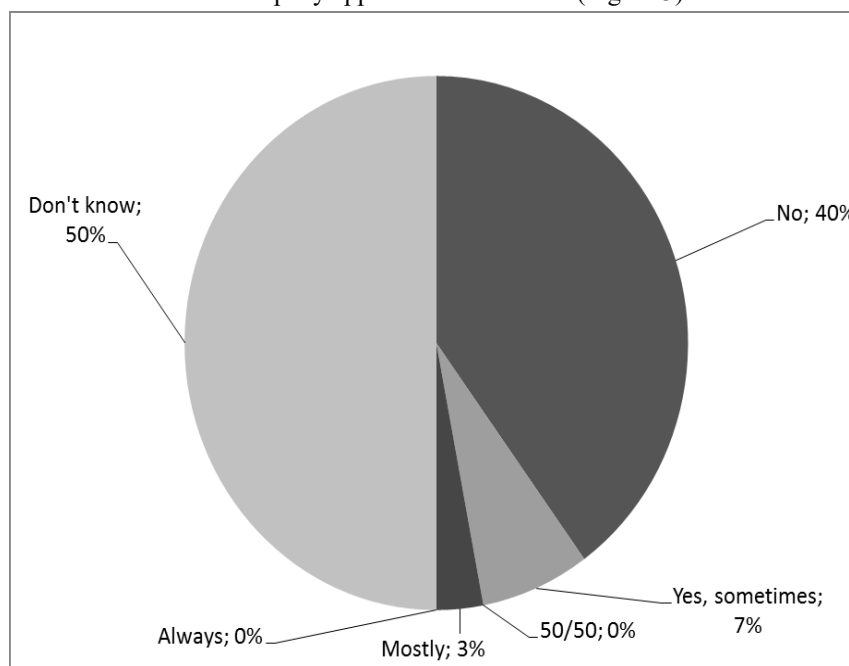


Figure 3 Survey answer to the question: Do you apply agile project management to projects?

3 Discussion

The studies revealed that, although knowledge of agile project management is spreading among academics, it comes up somewhat short of expectations regarding its application in non-IT companies. Even if the company reports a turbulent environment, which is a prerequisite for exploring new – other than traditional – project management methods, the organisation has very limited knowledge of APM methods. Furthermore, the number of non-IT companies applying APM in practice is significantly low. Moreover, if they apply APM, it is most often as a sub-part of bigger programs run with traditional, mostly waterfall project management methods. Only a few companies decide to run single projects solely in accordance with the APM approach. This situation shows that there is significant room for disseminating APM methods among non-IT companies and endorsing their application in different forms and scope.

Conclusion

Traditional project management methods have been developed and improved over the decades. Therefore, their broad application in companies is indisputable. However, in modern turbulent environments, they seem to be insufficient according to the new challenges organisations are facing. The need for time- to- market reduction, cost-cutting and enhancing client satisfaction generate new demands in managing the projects. The answer to this demand seems to be modern project management methods, including the agile approach, which looks like the most suitable for non-IT industries. However, the study revealed that the application of agile project management methods in the companies is very limited. This situation can be caused by many factors which need to be further investigated. The conducted questionnaire-based survey is limited by its sample size, but its results indicate further research directions. One of them should definitely be focused on trying to answer the question: why are APM methods barely recognised by non-IT industries? Another could investigate knowledge of APM at the top-management level. Finally, research procuring knowledge from different sectors with a bigger sample size would be advisable.

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*THE ROLE OF PROCESS IMPROVEMENT TOOLS IN COMPANIES
OPERATING IN POLAND*

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Abstract

Purpose of the article The aim of this article is to identify the main internal factors which determine the implementation of both system management tools and process improvement tools to develop quality management concepts by companies.

Methodology/methods The empirical research conducted has focused on identifying the main reasons present connected with the implementation of QEHS management systems and tools to improve operational processes (such as TPS, or LM) by companies operating in Poland. The study was carried out through the use of a postal survey.

Scientific aim The scientific goal of the development of the article is to determine the role of risk management concepts, being the current and most up to date approach in the implementation and improvement of the quality management system.

Findings The results of the study indicate that enterprises operating in Poland and implementing QM systems focused especially on reducing the risk of nonconformity in the processes and reducing the risks of product. Companies improving QM systems most often implement an environmental management system and a health and safety management system as well as other improvement tools like elements of TPS and LM.

Conclusions It can be observed that for many companies operating in Poland the distinguishing feature of competitiveness is not the implementation of a quality management system which complies with the requirements of standard ISO 9001, but, increasingly, companies are focusing their attention on other solutions of the system, consistent with the objectives of other organizational standards, like environmental, health and safety (EHS) management systems as well as the other operational management tools based on TPS or LM concept. Such an approach is often not only perceived as being more ambitious, but also more pragmatic, as these solutions can bring companies more benefits, not only in economic but also social terms.

Keywords: quality management, risk management, process improvement, continuous improvement

JEL Classification: M15, M21

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Introduction

Increased competition in international markets means that both large companies (especially multinationals) as well as small and medium-sized businesses still have a great deal of interest in the introduction tools for quality improvement of products, processes and management systems. Starting from the seventies and eighties of the last century, especially in highly developed countries such as the United States, Japan, Great Britain or Germany, significant achievements in the development of products, improvement of processes and management systems can be observed. Additionally, for over 25 years, significant progress in the improvement of products, processes and management systems has also been noticed in the countries of Central and Eastern Europe. Specific achievements in the development of product improvement processes and management systems can be seen after the entry of several states of the region (such as Bulgaria, Estonia, Lithuania, Latvia, Czech Republic, Slovak Republic, Hungary, Romania, Slovenia, Croatia and Poland) to the European Union. Successful implementation of a quality management system allows the control of processes (define objectives, performance standards and evaluation methods) in order to achieve the expected quality of processes and products. (Weckenmann and Akkasoglu, 2015) Companies have recognized that greater effects could be achieved by implementing other operational improvement tools which are additional to the requirements of international quality management standards. For this reason, companies are increasingly turning their attention to other tools to improve the results of ongoing operational processes which should be closely related to the implementation of the development strategy of the company. In this regard, companies can use: organizational standards in environmental management (ISO series 14000), the management of occupational health and safety (OHSAS 18001) as well as operational improvement tools like Toyota Production System (Kaizen, 5S, TPM), Lean Management concept, or Lean Six Sigma projects. The purpose of this article is to present the main conditions connected with the implementation of QEHS management systems and tools to improve operational processes such as elements of TPS, or Lean Management (LM).

1 The approach for the improvement of quality management systems based on risk management

Activities related to the improvement of the quality management system should be treated as changes in the organization which can have external and internal conditions. External conditions should include the ever-changing expectations of stakeholders (especially the organization's customers), competitors' activities as well as changes in legal regulations. On the other hand, internal conditions indicate a company's needs related to the improvement of organizational capability (aiming to improve efficiency and effectiveness) and the development of the technical quality of the products (increase the level of reliability, ensuring safety and reducing the negative impact on the environment). Increasingly, companies are beginning to perceive opportunities for improvement through the prevention of nonconformities in the processes carried out by themselves and their partners in the supply chain. Organizations are increasingly making efforts to protect themselves against the risks arising from the impact of external factors. Therefore, many companies have introduced the concept of risk management based on the requirements of the international standard for management in accordance with ISO 31000. (Neves et al, 2015) This standard is the primary principle and guideline for the implementation of the risk management system. The widespread interest in the concept of risk management is due to the amendment of the requirements of quality (ISO 9001) and environmental (ISO 14001) management standards which took place in September 2015. The concept of risk management, whose guidelines were included in ISO 31000, includes the following activities: risk identification and description, risk analysis and evaluation, risk treatment, monitoring and reviewing risk assessment. Risk management should be a continuous process, its effective implementation requires the establishment of standard operational procedures (SOP). These procedures should specify the rules of conduct for preventing incompatibilities and specify the action necessary in the event of any threats, accountability for results and monitoring and evaluation of effectiveness. Specific efforts of companies focused on mitigating risk in operational processes, which include customer service, research and development, purchasing and building relationships with suppliers, maintenance, production and delivery of products to customers, as well as product handling after use. One of the most commonly used tools which enables organizations to identify risks of hazards in processes / products and the design methodology of preventive and corrective actions is the Failure Mode and Effect Analysis (FMEA). This analysis determines the probability of threats, identify methods of detection of non-compliance, their potential impact and importance to the customer (Dudek-Burlikowska, 2011; Bhattacharya, 2015). In order to disseminate the use of other risk management tools, the International Organization for Standardization published a document, ISO 31010, which provides guidance on selection and application of systematic techniques for risk assessment (Garrido et al, 2011). It should be mentioned that among the selected techniques for risk analysis (beyond Failure Mode and Effect Analysis) recommended for use by organizations in this document were: check lists, Preliminary Hazard Analysis (PHA), brainstorming, Delphi technique, Structured "What-if" Technique (SWIFT), Human Reliability Analysis (HRA),

Root Cause Analysis/ Single Loss Analysis (RCA/ SLA), Toxicological Assessment/ Toxicity Assessment (TA), Business Impact Analysis (BIA), Fault Tree Analysis (FTA), Event Tree Analysis (EFA), Cause-consequence analysis (CCA), Cause-and-effect Analysis (Ishikawa Analysis, Fishbone Analysis), Reliability Centered Maintenance (RCM), Sneak Circuit Analysis (SCA), Hazard and Operability Studies (HAZOP), Hazard Analysis and Critical Control Points (HACCP), Layers and Protection Analysis (LOPA), Bow Tie Analysis (BTA), Markov Analysis (MA), Monte-Carlo Analysis (MCA) and Bayesian Analysis (BA).

2 A holistic approach to improve the quality management system

Analyzing the activities of enterprises, it can be perceived that they are often implementing integrated management systems based on organizational standards which stem from the concept of improving the PDCA cycle (Bernardo et al., 2012; Bernardo, 2014; Jankalová, 2012; Jørgensen, et al., 2006). In many companies, especially in global corporations, a holistic process improvement approach can be noticed, based on the implementation of QEHS management systems depending on international organizational standards (like ISO 9001, OHSAS 18001, ISO 14001) as well as on the concept of the Toyota Production System (mainly Kaizen, 5S, Total Productive Maintenance), Lean Management, and Six Sigma methodologies (Ringen et al., 2014). This holistic approach can further contribute to optimizing the use of resources and improving the effectiveness and efficiency of the processes, raising the awareness and qualifications of employees, building relationships with stakeholder organizations (especially with customers, suppliers and employees), removing the causes of waste, shortening cycles of operational processes as well as reducing the negative impact of the processes carried out by organizations and their products on the environment. The result is a holistic approach that also reduces the level of risk in relation to products, personnel, information, operation processes and infrastructure or environmental pollution. (Klefsjö et al. Koksál et al., 2011; Pool et al., 2011; Ringen et al., 2014, Sahnó et al., 2015).

The starting point in a holistic approach is planning based on the periodic determination of measurable objectives which develop the organization's strategic objectives aimed at meeting the requirements and expectations of its stakeholders. Many multinationals use the Business Balanced Scorecard for this purpose (Kaplan and Norton, 2001; Goswami, 2015). In order to engage the different groups of employees within the various elements of the organizational structure (such as business units, departments, task forces) in codetermined purposes, companies attempt to implement Hoshin Planning concept. (Jolayemi, 2009; Manos, 2010; Zairi, 2011)

The guidelines of international QEHS management standards indicate that during the planning of operational processes, organizations should take into account such resources as staff qualifications, infrastructure, information, the environment, relationships with suppliers and financial resources necessary to achieve established objectives. Effective implementation of operational processes should be carried out in accordance with the recommendations of conduct in the international QEHS management standards, and process results should be confirmed by documented information. An organization can achieve an increase in the efficiency and effectiveness of the process through the implementation of system requirements for quality management (focusing on a decrease of product nonconformities), environmental management (focusing on reducing any negative impacts on the environment), security management (focusing on reducing the risks associated with process controls, production / use of products), and implementing the concept of Toyota Production System (focusing on ensuring a continuity in the flow of processes), as well as implementation of a project approach based on Lean Management concept (focusing on eliminate wastes). Evaluation of the effectiveness of the processes allows the specification of further opportunities to ensure the sustainable success of an organization through excellence, which can be achieved by analyzing information relating to meeting the needs and expectations of customers and other stakeholders. This evaluation should be conducted through analyzing the capability and efficiency of the processes (meters), internal and external audit results, the implementation of quality cost accounting, self-assessment (based on EFQM model or ISO 9004), benchmarking, and risk analysis of any still emerging threats.

3 The results of the empirical study

The aim of the survey was to identify the main decisive factors for the implementation of organizational improvement tools in production companies and in their support services providers. The empirical study was carried out from September to December 2013 through the use of a postal survey. Questionnaires were sent to 3857 companies operating in Poland. 182 questionnaires were returned (response rate at 4.7%). Companies were selected from a database of the ISO Guide 2012. The results of this study indicate that the surveyed enterprises, wanting to develop their processes, implement organizational improvement tools such as QEHS management systems, elements of the Toyota Production System (such as Kaizen, 5S, TPM) and concept Lean Management. Details of the study in terms of cross-segmentation are presented below (Tables 1, 2, 3, 4, and 5).

Table 1 The main reasons for implementing QMS by the surveyed companies [%]

The main Reasons	Sector		Origin of capital		Number of employees		
	Producers N=112	Service providers N=70	Foreign N=41	Polish N=141	-50 N=45	51-250 N=89	251- N=48
Reducing the risk of nonconformity in the processes	75.21	67.21	75.21	73.05	66.67	78.65	66.67
Increasing the awareness and commitment of employees	77.69	57.38	77.69	73.05	62.22	80.90	60.42
Increasing the efficiency of processes	71.07	57.38	71.07	68.79	60,00	73.03	60.42
The possibility of product improvement	65.29	55.74	65.29	63.12	64.44	67.42	50.00
Reducing the risks of the product	61.98	45.90	61.98	56.74	55.56	64.04	43.75

Source: Results of empirical study, 2013

Results of this study indicate that the surveyed enterprises wanting to improve the quality management system implemented by other tools to improve processes such as environmental management system (nearly 40% of the surveyed companies), whether the management of health and safety (30% of enterprises). Implementation of the environmental management systems and health and safety management systems is characteristic mainly for manufactures.

Table 2 The main reasons for implementing EMS by the surveyed companies [%]

The main reasons	Sector		Origin of capital		Number of employees		
	Producers N=55	Service providers N=15	Foreign N=23	Polish N=47	-50 N=11	51-250 N=28	251- N=31
Reducing any negative impacts on the environment	90.91	80.00	91.30	87.23	100.00	100.00	82.86
Increasing the awareness and commitment of employees	56.36	60.00	43.48	63.83	63.64	57.14	57.14
Reducing the risks of the product	32.73	53.33	34.78	38.30	54.55	28.57	28.57
Reducing the risk of nonconformity in the processes	30.91	40.00	21.74	38.30	45.45	32.14	32.14

Source: Results of empirical study, 2013

Table 3 The main reasons for implementing HSMS by surveyed companies [%]

The main reasons	Sector		Origin of capital		Number of employees	
	Producers N=33	Service providers N=12	Foreign N=16	Polish N=29	-250 N=25	251- N=20
Improving workplace safety	93.94	83.33	93.75	89.66	88.00	95.00
Increasing the awareness and commitment of employees	54.55	58.33	68.75	48.28	52.00	60.00
Reducing the risk of nonconformity in the processes	24.24	50.00	18.75	37.93	28.00	35.00
Increasing the efficiency of processes	21.21	41.67	25.00	27.59	32.00	20.00

Source: Results of empirical study, 2013

A relatively large group of organizations that have been surveyed, trying to improve the quality management system implemented elements of the Toyota Production System (more than 20% of companies) and concept of Lean Management (17% of surveyed firms). It should be noted that the implementation of elements of the

Toyota Production System and Lean Management is characterized mainly producers as well as medium and large organizations.

Table 4 The main reasons for implementing elements of TPS by the surveyed companies [%]

The main reasons	Sector		Origin of capital		Number of employees	
	Producers N=32	Service providers N=7	Foreign N=15	Polish N=24	-250 N=24	251- N=15
Increasing the awareness and commitment of employees	59.38	57.14	53.33	62.50	33.33	53.33
Improving workplace safety	50.00	85.71	53.33	58.33	62.50	73.33
Shortening process cycles	46.88	42.86	40.00	50.00	54.16	33.33
Increasing the efficiency of processes	46.88	28.57	26.67	54.17	54.16	26.67
Reducing the risk of nonconformity in the processes	37.50	42.86	20.00	50.00	54.16	33.33
Reducing the risks of the product	31.25	28.57	20.00	37.50	37.50	20.00
The possibility of product improvement	28.13	42.86	26.67	33.33	29.16	26.67

Source: Results of empirical study, 2013

Table 5 The main reasons for implementing Lean Management by the surveyed companies [%]

The main reasons for implementing Lean Management	Sector		Origin of capital		Number of employees	
	Producers N=24	Service providers N=7	Foreign N=17	Polish N=14	-250 N=21	251- N=11
Shortening process cycles	79.17	85.71	88.24	71.43	83.33	76.92
Increasing the efficiency of processes	66.67	71.43	76.47	57.14	66.66	69.23
Increasing the awareness and commitment of employees	41.67	71.43	58.82	35.71	44.00	53.85
Reducing the risk of nonconformity in the processes	37.50	71.43	47.06	42.86	50.00	38.46
Reducing the risks of the product	33.33	57.14	47.06	28.57	27.77	53.85
Improving workplace safety	25.00	42.86	29.41	28.57	27.77	30.77

Source: Results of empirical study, 2013

4 Discussion

By analyzing the detailed results of the research, it may be observed that the surveyed companies implementing quality management system mainly focused on reducing the risk of nonconformity in the processes, increasing the awareness and commitment of employees, increasing the efficiency of processes, enhancing the possibility of product improvement and reducing the risks of the product. The most frequently cited are manufacturers, companies with foreign capital and medium-sized enterprises.

The most important reason for the implementation of the environmental management system is a reduction in the negative impact on the environment. Other important determinants of the implementation of this system include reducing the risks associated with products and processes.

Implementation of the health and safety management system determines the efforts of companies related to improving workplace safety. Other reasons for the deployment of this system are also a reduction in nonconformities in processes, as well as an increase in the efficiency of processes.

The study results clearly show that the main determinants of deciding on the implementation of elements of Toyota Production System (like kaizen, 5S, Total Productive Maintenance) are an increased awareness and commitment of employees, improving workplace safety, shortening process cycles and an increase in the efficiency of processes. Noteworthy is the fact that companies with domestic capital focused on this goal.

One should notice that the main objectives of the companies focusing on the implementation of Lean Management are shortening cycle processes as well as an increase in the efficiency of processes. Enterprises with foreign capital mainly targeted this aim.

It is significant that all types of enterprises intending to improve quality management systems by implementing an environmental management system and a health and safety management system as well as other improvement tools (like TPM or Lean Management) aim to increase the awareness and commitment of employees.

Summing up the results of the research, one may clearly notice that, according to the latest global trends, companies operating in Poland, by deploying QHSE management systems, seek to reduce the risk of inconsistencies in processes and risks associated with products. On the other hand, by introducing tools for the improvement of operational processes, they explicitly seek to reduce cycle times and improve process efficiency. Undoubtedly, a particularly important result of the implementation of both the QHSE management systems and the other tools for process improvement is the increase in the awareness and involvement of employees.

Conclusion

Nowadays, it can be observed that for many enterprises operating in Poland the distinguishing feature of competitiveness is not just the implementation of a quality management system complying with the requirements standard ISO 9001. Increasingly, companies focus their attention on other solutions of the system, consistent with the objectives of other organizational standards, like environmental, health and safety (EHS) management systems as well as other operational management tools based on the Toyota Production System (like Kaizen, 5S, TPM), Lean Management concept. Such an approach is often not only perceived as being more ambitious, but also more pragmatic. These solutions can bring companies more benefits, not only in economic but also social term. The implementation of these solutions is often dictated by the expectations of customers and internal determinants associated with the development of organizational culture, raising the awareness and involvement of employees, as well as improving the efficiency and effectiveness of processes. Effective and comprehensive implementation of operational improvement tools contributes to the development of the organization and fulfills the expectations of stakeholders, which has affected the provision of sustainable enterprises, giving a multitude of benefits, the most important of which include:

- Continuously improving the technical quality of tangible products and services (including the reduction of their negative environmental impact);
- Raising the awareness of staff and their skills, especially in responding effectively to non-compliance; Identification of risk (taking preventive action by examining the possibility of errors which cause undesirable changes in processes and / or products);
- The possibility of optimizing the organization's operations through the effective use of resources, reducing cycle processes, avoiding wastage, and introducing initiatives for improvement actions);
- The possibility of employee participation in setting goals and metrics for the assessment of policies; -Improving the effectiveness of communication with stakeholders and involving them in initiatives related to improving processes and products;
- Reducing the level of risk associated with the safety of products, personnel, information, infrastructure, and the environment.

The pursuit of sustained success requires continuous analysis of the company in this field, especially in relation to the risks and the dangers of the impact of external environment influences. Improvement of quality management systems allows enterprises to build closer relationships with supply chain partners, both customers and suppliers, through joint implementation of projects related to product and process innovations as well as ensuring the continuity of operational processes (such as the achievement of the projected effectiveness and efficiency) by forming networks between the business partners. On the basis of improvements of quality management systems, within the companies' efforts in this sphere are those strictly focused on building relationships with employees, especially in investing in their professional and personal development, in order to raise the awareness and commitment of staff, as well as providing a safe working environment (Kanji, Chopra, 2010). These efforts are aimed at reducing accident rates by raising the awareness of the employees of occupational risks and threats.

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*FOOD COOPERATIVES IN THE TWENTY-FIRST CENTURY - ECONOMIC
AND THE NON-ECONOMIC REASONS FOR CREATION*

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Abstract

Purpose The aim of the article is to identify the causes of the dynamic development of food cooperatives in the twenty-first century. This informal movement has at its foundation both economic and non-economic causes. The author indicates that the cause is the consumer choice theory.

Methodology The study focused on food cooperatives signature web pages. A procedure was defined to seek information about goals of the food cooperatives outlined in the web pages and social media 30 food coops. The search was limited to the web pages of the polish food cooperatives.

Scientific aim Historical references indicate that the primary cause of the rise of food coops in the past is a form of grass-roots response of consumers to the consumer enslavement in the nineteenth century by industrial capitalism, in the twenty-first century enslavement by corporate capitalism. This issue is still important today.

Findings When creating food coops starting point is the lower price and higher quality - resulting from the value of healthy eating and a healthy lifestyle. This is the objective pursued in the first place by far the largest part of the cooperatives. Most cooperatives operate in large cities. There is a greater number of people choosing a healthy lifestyle, as well as the more difficult it is, because of the remoteness of agricultural production, access to a truly healthy food.

Conclusions Food coops as a movement are real informal market actors. Their action allows the implementation of members' needs and contributes to greater openness market for organic farmers. These operate on the basis of formal laws. In any event, the State should not restrict activities food coops especially through taxation. Because it is the consumer's choice which facilitates creation of the framework for civil society.

Keywords: food cooperatives, organic food, healthylifestyle, direct sales

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Introduction

It would seem that the twenty first century in its second decade provides the consumers and producers with a globally organized, developed economy - both production and consumption and as is stated by the economic theory of a consumer and a producer, these groups pursue their goals: maximize consumption and profits respectively. The theory of management boasts effective methods of human resources management and emphasizes the social responsibility of business. Therefore, from a global point of view, everything seems to be well-arranged. The consumers, having access solely to standardized products and services, regardless of where they live, can only decide on their amount. This availability, in the economic sense, results from their activity on the labour market or the social security offered by the welfare state. Manufacturers operating on a commonly oligopolistic market maximize their profits without any additional effort (cost) taking into account the individual needs of customers. For both groups, the possibility of increasing their activity is provided by the extensive global financial sector overseeing private needs, but also public government spending.

The "bird's eye" view of the global economy is calming for the corporations, governments and international organizations. It presents an image, created out of pieces created by them. It is balanced, functioning according to the rules they have established. On the other hand, the "ground level" local view shows quite a different picture: here the consumers want to have a choice, the producers require market openness, the working force is looking for work in decent conditions. Therefore, as in the nineteenth century, also now initiatives postulating social solidarity are appearing in the form of consumers' and producers' cooperatives, Loan and Benefit Funds and mutual loan associations. In the nineteenth century cooperatism was also the intellectual response to the ideology of revolutionary Marxism and an economic alternative to the free-market industrial capitalism. In the twenty-first century, cooperatism is a response to political capitalism, colonial capitalism - globalization of profit, exclusion and indifference - decrease in the resources of social capital. The globally organised corporate world in conjunction with the local problems of producers and consumers, in the latter evokes efforts to create alternatives to the current dominant manner of production and consumption. Just as in the nineteenth century, an alternative is presented by food co-operatives.

Analysis of today's phenomenon in this field refers to the historical processes. Publications in the field of economics, philosophy, sociology, dealing with food coops usually refer to the literature and the experience of joint actions of people in different areas - namely the cooperative movement of the nineteenth century. Today's reports of such actions point to their particular growth in the early twenty-first century. The main purpose of the paper is to present the causes of the dynamic development of food cooperatives today. This is a research paper. The research findings can be used to show that the food cooperatives is a place of fulfilling not only basic needs but also higher needs such as need for common action. Food cooperatives can create a framework for civil society and grassroots democracy.

1 The history of food cooperatives

Initiatives of mutual and solidarity activities across Europe appeared even before the nineteenth century. In Poland, such actions occurred already during the fifteenth and eighteenth centuries in the form of mining cooperative and private associations, fishing *maszoperie*. The eighteenth century saw the formation of community savings banks, insurance against fire, and granaries (Okraska, 2014). In England, attempts of "self-rescue" through the establishment of self-help of associations started already in the second half of the eighteenth century. These were mostly company mills and bakeries, because bread, the most necessary article of food, gave the opportunity of the greatest exploitation. Exploitation in the factory and exploitation at the grocer's, overwork, ignorance, hopelessness of existence (Thugutt, 1945) forced the actions of a group of workers from Rochdale near Manchester (called the Rochdale weavers). Their determination was supported by experience and learning from the mistakes of the previously undertaken, unsuccessful efforts to create a cooperative. The initiative to create a shop by the Cooperative of Righteous Pioneers in Rochdale succeeded. Funds were gathered, every Sunday appointed collectors, visited the future members in the morning (there were about thirty collectors), collecting the contributions initially amounting to 2 pence. In the evening of 21 December 1844, in Rochdale at Toad Lane, took place the opening of the first, famous today, shop of the pioneers. The project developed dynamically and over the course of a year the number of members of the cooperative doubled to 74 people, in 1850 the Cooperative had 1,400 members, and in 1928- 25,288 members. In that year the cooperative had 91 shops, 2 cafés and a pastry shop, also a bakery, a slaughterhouse, factory of tobacco products, tailoring and shoemaking workshops. They ran an insurance department, a savings bank for children, and built more than 500 houses for its members (Thugutt, 1945).

Weavers in Rochdale achieved success because they found for their organization forms so effectively leading to the goal, like no one else had done before them. That is why the forms invented by them under the name of

"Rochdale rules" have been adopted by tens of millions of consumers organized within their cooperatives. These principles are few in number, and all of them come from logic and common sense. The principles developed by the Rochdale pioneers were accurately captured and incorporated into the statute of the International Cooperative Alliance under the Act of Congress of that Association in Paris in 1937. From that time on, they apply to cooperative organizations of all countries. Together they constitute: "The 7 Rochdale Principles":

- 1 open membership
- 2 democratic system - one man one vote
- 3 member participation in surpluses proportional to the contributions paid to the cooperative
- 4 limited interest on shares
- 5 religious and political neutrality
- 6 selling only for cash
- 7 educational activities.

The utopian dreams of a better world came true. However, not only utopian thinkers, but later also positivism and the social teaching of the Church found in the idea of cooperatism an opportunity for the union work of people as producers, consumers and managers-citizens, acting voluntarily, and providing them with the possibility of their own existence in the midst of others like them. Also in Poland the cooperatists understood that they had to rely on themselves, not on the philanthropists and the government. The ideas of the Righteous Pioneers from Rochdale became a reality because, taught by experience, they understood that they had to rely on their own capital, not on donors, and must pose achievable goals. In Poland, and more precisely on the Polish territories under occupation, the cooperative movement begins in the seventies of the XIX century. Cooperative initiatives had a uniform ideological profile, and strived for central association within several strongly related institutions. It was a cooperative of minor owners, but with a commonly accepted doctrine of retaining the Polish state ownership of these lands. At the same time also the Polish food cooperatives were formed - cooperatives initiated by Karol Miarka.

The development of Polish food cooperatives was a process just as dynamic as in England. "Our Age is the age of associations, and various kinds of unions. People associate together increasingly often in order to save, give, buy, sell and in general *viribus unitis* go forward along with the progress. Within this common current tendency for associations, an outstanding place was taken by cooperative food associations, otherwise called food cooperatives. Tiny in their early years 60 years ago, today they took the form of a powerful movement, about which even the reluctant economists say that this was the only social initiative in the nineteenth century, which was a complete success" (Mężnicky, 1912). Food cooperatives already exist in all countries and everywhere show an amazing potential for proliferation. In 1908, there were 18,000 food cooperatives in Poland, involving 7 million members, and including their families that meant 28 million people. In the Polish Kingdom, in 1908 there were more than 650 consumer associations, encompassing 90,000 members and selling goods worth 12 million rubles a year. Along with the increase in turnover and the improvement of the economy of the cooperatives, the sum of these savings would increase from year to year by new hundreds of thousands of rubles, putting a stop to the outflow of gold from the pockets of broad masses of our kin, into the pockets of speculators and various profiteers. „The stores of our associations regulate prices, limit price increases, eliminate trumpery and the so widely spread adulterations!" (Mężnicky, 1912).

Cooperatists in Poland did not share the view that the warfare is the only driving force of social change. They perceived the new "social" vision of a society in the paradigm of general cooperation and political pragmatics, consisting in associating in groups to ensure the economic success and development of democratic mechanisms of governance and social coexistence.

For many cooperatists in Poland under occupation, the search for a vision of a new society had its source in the history of the Polish nation; it was about avoiding the path of unbridled capitalism, the protection of human dignity as a conscious participant in the association, the state, and the nation. Edward Abramowski, the chief ideologist of the cooperatists movement in Poland, bases the cooperative system on the symbiosis of the individual and society in such a way as to, preserving the individual needs and an initiative, provide the standard of living to the community. "In the existing capitalist society there are the conditions, forces and forms that allow for the building of a new society based on economic and democratic commonality of the workers. These are mainly consumer cooperatives" (Abramowski, 2014).

Leftist cooperatism ideologues, among them Edward Milewski, voiced different views "Cooperation is the antithesis of capitalism, raises the welfare of groups, layers, classes, the community. It contributes to the equitable distribution of income. It frees the society from the tyranny of trust millionaires, from the vampirism of cartels. Provides the liberation to the masses and individuals. Defends the worker and the consumer from exploitation by oligarchs" (Milewski, 1930).

2 Food cooperatives in the twenty-first century

Food co-operatives are initiatives uniting a group of consumers and farmers organized on a voluntary basis. Their goal is to make direct purchases of agricultural products from reliable farmers and food producers. A consumer cooperative, also called trade or the food cooperative, is a cooperative creating a network of producers and consumers. Its purpose is to maintain direct cooperation with manufacturers, thereby obtaining an impact on the way of production and quality of the food, as well as constant and low prices.

In the twenty-first century, the cooperatists refer to the nineteenth century cooperative ideology, indicating like the then cooperatists, left-wing, liberal and anarchist ideology alike. On their websites they write that their cooperatives are the complete opposite of consumerism. One of the Rochdale principles, maybe not especially displayed, was and is providing the members with high quality goods. "When the Righteous Pioneers' Cooperative was created, the poor consumer did not know what a good product was. Two effects, both sinister, resulted from this. Firstly, he ruined his health, eating abominable false products. Secondly, he felt humiliated in his human dignity" (Thugutt, 1945).

Historian of the Rochdale Pioneers, G.J. Holyoake wrote, "They put principle first and profit second, believing, that principle was the foundation honourable profit, and only honest source of it....Like Diogenes, they went in search of honest profit by light of principle, and they found it in honest co-operation" (Holyoake, 1918).

About the necessity of moral transformation for the development of the cooperative movement also Abramowski E. (1965) wrote in one of his last works. 100 years later the problem of moral principles is still very current. Modern capitalism, through consumerism and globalization, has become a system perceived by consumers as a kind of totalitarianism.

Hyperconsumption forced by globalization and leaving the capitalist market to its own devices led to a situation where even if someone wanted to be honest and decent, he was unable to do so under the threat of bankruptcy. Morality no longer paid off, and ruthlessness began. The fine print capitalism is a system that has a built-in mechanism of fraud as a prerequisite for economic success. It is characterized by the complete abandonment of any moral grounds for profit. It preys on the belief still present in people that others cannot want to deceive us, because fraud is simply a bad thing. When we all decide that we have no other choice but to cheat, not to become a victim of a fraud (cheat not to get ripped off), the moral decline will be complete, and the social trust, today among us almost at the lowest level in the world, will reach the bottom. Society will fall apart, and we will return to the familiar from the Hobbes' philosophy state of nature, in which everybody fight each other (Szahaj, 2014).

Reports of phytosanitary inspection carried out in the industrial agri-food production and trade in the twenty-first century, on the basis of the EU and national legal provisions, supply the data that arise resentment and distrust of many consumers. Consumers ask themselves the question why the products they are offered for purchase are distasteful and unhealthy. Why are they doomed to time-consuming and tiring shopping in supermarkets? Why the screaming advertisements generate unlimited needs, while we are accompanied by the limitations of resources. Is continuous rivalry inevitable?

Finding answers to these questions caused food cooperatives to become popular in Western Europe and North America, also Japan. The largest cooperative is Copenhagen Food Cooperative KBHFF (<http://kbhff.dk/>) operating since 2008. It comprises of more than 5,500 members, who each week buy more than 5 tons of fruit and vegetables directly from local producers. The oldest is a Brooklyn Cooperative - Park Slope Food Coop - operational since 1973 (<http://www.foodcoop.com/home>).

Modern Food Coops refer to the principles of the Rochdale Pioneers, although some differences have to be pointed out here. The Pioneers looked to formalize their activities (for the development of their movement a good law on cooperatives was needed). Food Coops in the XXI century are informal cooperatives. They avoid formalization, giving the complexity of the registration procedure and unnecessary additional costs as the reason. Only very few are set up as foundations. The difference also refers to appropriate prices. The Rochdale principle regarding prices mentioned sales at market prices and payment of a difference in proportion to the made turnover in relation to the purchase price, including costs incurred, after the end of the year, as the return of a member's savings (although even then the discussion about the level of prices took place). Modern Food Coops attract members with the lower price of healthy foods. They emphasize that shopping together means lower margins for consumers and higher for the supported manufacturers of healthy food, because it omits the middlemen. Other rules are fully applied. The statutes contain a note regarding the working time, usually a few hours a month for the benefit of the cooperative. The amount of the initial contribution is determined, ranging from PLN 10 (for cooperatives in Bialystok) to PLN 50 (for cooperatives in the Warsaw Grochow), returned at the moment of resigning from the membership. Cooperatives also apply the principle of allocation to the district fund - from

10% to 20% of the value of the purchase transaction. This fund allows for the realization of social goals set by the Food Coops. Large cooperatives also conduct educational activities and disseminate the ideas of the cooperative movement through the organization of workshops and meetings, also provide social assistance. Just as in the nineteenth century, various cooperatives communicate with each other and organize themselves into unions, though informal.

In the twenty-first century, the original principle of good product means healthy food and a healthy lifestyle. Modern technology favours joining in the joint purchasing. "The whole life of a cooperative goes on Facebook", those who are not on the Facebook can use the e-mail. These "smart" information solutions allow for organizing your order and then quickly make purchases. The meeting "in reality" usually occurs once or twice a week, in order to pick up the purchased goods.

The cooperative movement of the twenty-first century also refers to the contemporary advocates of aid organizations. Principles of operation of cooperatives plus Edgar Parnell serve as a guide to activity of cooperatives around the world. Cooperatives are managed by ordinary people and operate for the benefit of ordinary people. They must be organized in such a way, so that their members can easily understand and control them. Simplicity should be a key feature of any organization, unnecessary complexity should be avoided (Parnell, 2015).

It should be noted that among the new XXI century food networks, some that are of snobbish nature are formed. Alternative Food Networks (AFN) focuses on the exclusivity of food networks, using ecology and the food "straight from the farmer" as a way to underline their status as members of the middle class. They become enclosed spaces. Strategies of affluent consumers are based, among others, on the selection of products of high quality and with refined taste. The researchers suggest that this often excludes the poorest manufacturers who are not able to provide a product of such quality that would be expected by the western member of the AFN (Bryant, Goodman, 2013).

3 Purposes of the association of food coops consumers in Poland

The first modern cooperative in Poland was founded in 2010 and has operated ever since. It is the Warsaw Food Cooperative. In the last five years more than 30 food cooperatives were established in Poland. It is difficult to determine the exact number of associations and their members. They are mostly informal groups, which are changing rapidly: some suspend their activity, others are created, new members come and go, and some cooperatives transform into formal organizations. It can be estimated that an average cooperative comprises of approx. 50 people, although periodically some had more than 500 members (Bilewicz, Potkańska, 2013). Already four meetings of food cooperatives were held: in 2012 in Warsaw, in 2013 in Lodz, III congress was held in 2014 in Cracow, IV in Warsaw in 2015, which were attended by cooperatives from other countries - the Czech Republic, Denmark, France, Germany.

Cooperatives provide hundreds of their members with such a wide range of food that they almost do not have to visit stores. Each of them cooperates with dozens of farmers and producers who bring or send fruit and vegetables, meat, fish, dairy products, milk or cereal products. In addition, they sell other products, such as cosmetics and eco cleaning products. Some manufacturers supply several cooperatives. As it appears from yet unpublished study of the Institute of Rural Development and Agricultural Sciences, for some of them cooperatives account for up to approx. 25% of total sales, and therefore constitute quite a serious purchasing power (Bilewicz, 2015).

In turn, the "Report from the Research: Who is allured by healthy food?" shows that Poles are increasingly looking for healthy products. Therefore markets and bazaars are coming back to life, where 51% of respondents make purchases, but 25% of respondents buy healthy food in food cooperatives. This trend occurs in large cities. (Report from the Research 2015).

Food cooperatives are informal bottom-up initiatives of consumers. The economic consumer theory formulates four foundations of the made choices: preferences, income / budget, price and the consumer's objective, which is maximisation of consumer satisfaction with the shopping. The very consumer is defined here as the person making a decision to purchase. In their choices the consumers are guided with the appearance, but the implementation of the selection is limited by prices and incomes. Preferences, reflecting the subjective desire, and the usefulness as the individual assessment of importance, suitability of purchasing goods and services, although immeasurable from the economic point of view, as if initiate the purchase decision, measurable factors - price and income only correct this decision.

Within the understanding of the organization and management theory, the target is understood as an intention, which is formally established and expected to be achieved in the future, arising from the needs of the socio - economic environment in which the system operates. Objectives are commonly understood as the goals

we want to achieve in the future, so we can define them also as the adopted projects. They give, and determine the meaning of existence of every unit, system. It is also important to evaluate their implementation with regard to the following criteria: economic, technical, psychological. The objectives are subject to hierarchization and are determined at the following three levels: strategic, tactical, operational. In the case of an enterprise the strategic stage is the first and most important in the hierarchy. The strategic goals determined at this stage are numerically few and very general, and, therefore, most often concern the global policy of the company, which in turn strictly results from its mission. Therefore, it can be concluded that the proper and careful definition of the vision, to be followed by the organization, is critical for proper formulation of strategic goals. It should also be noted that because of the very large range of operation and long-term effect, strategic objectives are subject to the most flexible timeframe in the hierarchy (Griffin, 2010).

If we were to analyse the formation of food co-operatives from the point of view of the theory of the consumer and from the point of view of the hierarchy of goals in the theory of management, it can be concluded that the ability to implement their preferences regarding healthy food and a healthy lifestyle at prices more favourable than those offered by the dominant model of trade is the cause of association of consumers. A kind of a reversal of the hierarchy of objectives in relation to the theory of organization occurs here. A cooperative begins with the operational objective - shared shopping for some healthy food at a low price – a goal of good satisfying purchase. It worked for the Righteous Pioneers of Rochdale; they started with mundane things, the satisfaction of the basic needs of the members, the shop, which at the beginning sold only four products: flour, butter, sugar, and oat groats. Axiological basis of the consumer preferences, as if more deeply hidden in the implementation of the common good shopping. It becomes visible along with the stabilization of the relations between the members of the association.

The analysis of web pages of food cooperatives in Poland and their accounts on Facebook provides an image of cooperatives as young people (young faces look from the photos), educated, using the latest technology. And what is important - without stereotypes still occurring in other environments in the relationship: the inhabitants of towns and villages - countrymen. Many cooperatives profile their purchases as vegetarian or vegan, or luxury healthy food. A specific type of a co-operative is Agriculture Supported by the Community (RWS). These co-operatives contract purchases for the whole year. They sign a contract with a particular farmer, paying in advance for the whole year of supply. In Poland there are only a few of such group.

However, all of them, expressing their goals, enumerate:

Objective 1 - lower price and higher quality - resulting from the value of a healthy diet and lifestyle

Objective 2 - the desire for becoming independent from the corporate supply in hyper- and supermarkets

Objective 3 - obtaining a direct impact on the process of meeting basic needs.

They also define the objective resulting from the value of connecting the members, and the members - specific objective (Table 1). These purposes are for example: promoting economics of sharing and cooperatives; development of ecological agriculture; righteous, democratic and ecological economy.

Table 1 Prioritization of objectives of the food co-operatives' activities in Poland

Specification	Objective 1	Objective 2	Objective 3	Specific Objective
Kooperatywa Spożywcza Bełchatów	1	2	3	-
Kooperatywa Spożywcza Współpracownia w Białymstoku	1	2	3	Promoting economics of sharing and cooperatives
Podlaska Zielona Kooperatywa	1	2	3	Development of ecological agriculture
Bydgoska Kooperatywa Spożywcza	1	2	3	-
Swojska Kooperatywa Spożywcza w Elku	1	2	3	-
Gdańska Kooperatywa Spożywcza	1	2	3	Righteous, democratic and ecological economy
Tomata Gliwicka Kooperatywa Spożywcza	1	2	3	The exchange of ideas, new ideas
Izerska Kooperatywa Spożywcza	1	2	3	-
Kooperatywa Spożywcza Jelenia Góra	1	2	3	-
Kooperatywa Spożywcza Katowicka	1	2	3	Creating social capital, a real alternative to the capitalist system
Kooperatywa Spożywcza Kilce	1	2	3	-

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Kooperatywa Spożywcza Konstancin	1	2	3	-
Wawelska Kooperatywa Spożywcza	1	2	3	Social integration
Krakowska Kooperatywa Spożywcza	1	2	3	Support for local Polish producers, building trust in the relationship between producer and consumer
Kooperatywa Spożywcza Legnica - Lubin	1	2	3	-
Kooperatywa Spożywcza w Łodzi	1	2	3	Accomplishing the vision of fair trade
Kooperatywa Spożywcza w Olsztynie	1	2	3	-
Opolska Kooperatywa Spożywcza	1	2	3	Agriculture Supported by the Community
Kooperatywa Spożywcza w Pabianicach	1	2	3	-
Poznańska Kooperatywa Spożywcza	1	2	3	Alternative to dominant system of consumption
Rzeszowska Kooperatywa Spożywcza	1	2	3	Taking care of benefits for all
Kooperatywa Szczecin	1	2	3	Agriculture Supported by the Community
Toruńska Kooperatywa Spożywcza	1	2	3	-
Warszawska Kooperatywa Spożywcza	1	2	3	Righteous, democratic and ecological economy
Kooperatywa Spożywcza Dobrze	1	2	3	Alternative to a better world
Kooperatywa Południe Warszawa	1	2	3	-
Kooperatywa Spożywcza Saska Kępa	1	2	3	-
Kooperatywa KO GROO po godzinach	1	2	3	-
Kooperatywa Na Zdrowie	1	2	3	-
Kooperatywa Spożywcza Wrocław	1	2	3	-
Kooperatywa Zielona Góra	1	2	3	-
Żywiec Żywnościowa Klamara Suwerenna w Żywcu	1	2	3	Recreating primary rural-urban interdependencies

Source: Websites of the cooperatives or/and social media accounts

4 Discussion

The analysis of the factors that encourage the process of associating in food co-operatives, carried out for 32 cooperatives existing in Poland in 2015, clearly points to the economic factors. These factors included in the indicated objectives, marked as objectives 1, 2, 3, are provided by all cooperatives. For their implementation, Food Coops initiate their actions. To encourage other consumers to join, they compare the prices of individual products in a supermarket, an organic shop and in a cooperative. For example, in the case of 1 kilogram of carrots it is PLN 4.25 in a supermarket, PLN 5.50 in a certified eco-store, and PLN 2.50 in a cooperative.

These economic factors are as if on top of the first presentation of the information provided by the cooperative as "about us". Only "deeper" one can read about the values of the group and those specific purposes, not strictly uneconomic that these values allow to pursue. However, firstly, the group is created just to fulfil the basic needs of their members.

Historical analysis also shows that such a pragmatic approach of cooperatives allowed them, in contrast to the utopians, to realize their dreams.

Conclusion

Most cooperatives operate in large cities. There is a greater number of people choosing a healthy lifestyle, as well as the more difficult it is, because of the remoteness of agricultural production, access to a truly healthy food. It is also important to remark another economic factor in the form of mutual close cooperation of food coops and farmers engaged in direct sales of its products. These cooperatives, contracting supplies from farmers, supporting agriculture. These cooperatives should be considered as important from the point of view of

increasing the openness of the market for farmers producing organic food as well as causing changes in relations between inhabitants of cities and villages.

Food cooperatives, as an informal movement, are real market entities. Their actions allow for meeting the needs of members of associations and contribute to increasing the openness of the market to eco-agricultural producers. The latter operate on the basis of formal legislation on direct sales and tax laws. In Poland, the provisions in this respect should be modelled on such good EU examples as direct sales from farms in Austria. In any event, a State, struggling with budget deficits, should not restrict the activities of food cooperatives through any taxation. Food Coops are a consumer choice, providing the framework for selection of a civil society to those who want to have an impact on the economic and social life in their countries.

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**SECTION 8
STRATEGIC MANAGEMENT IN AN OPEN ECONOMY:
ENTREPRENEURSHIP, INNOVATION AND
INTERNATIONALIZATION**

*FORESIGHT APPLICATIONS FOR FUTURE ORIENTED SUPPLY CHAIN
AND LOGISTICS MANAGEMENT*

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Abstract

Purpose of the article The research topic undertaken by the author, aimed at answering the question: whether and how the use of foresight studies can help to meet the challenges in the process of improving the supply chains. Identification of the challenges faced by supply chains carried out at the initial stage of the research and directions of evaluation of supply chains presented in the literature constituted for the author the justification for seeking new solutions for supply chain and logistics management. The dynamics of the changes in the logistics companies' business environment forces the decision makers to focus on the future, which, on the one hand, is aimed at capturing the changes, and on the other, on dealing with uncertainty. Foresight is one of such tools. Diversity of the existing applications of the foresight research indicates the increased possibility of its application also to the needs of prospective supply chain management. The article presents the current range of applications of foresight studies in the area of supply chain management (including logistics), and three new categories of foresight research, taking into account the supply chains specificity, were suggested.

Methodology/methods The methodology used for the needs of the research process includes a review of the literature and an analysis of foresight projects in the area of supply chain and logistics management.

Scientific aim Proposing new types of foresight studies focused on supply chain and logistics management was the main purpose of the article. According to the proposed new types of foresight studies, possibilities of its application, reasons for its uses by particular users were identified.

Findings Taking into account the types of foresight projects acknowledged in the literature and used in practice and various application areas of foresight research, the author has attempted to expand the existing classification of the foresight studies with three types taking into account the specificity of determinants of supply chains and logistics processes: chain foresight, the process foresight and strategic project foresight.

Conclusions Since the conducted studies are theoretical, they require orientation of further research on the process of operationalization of the foresight research methodology, aiming at the selection of research methods, selection of experts, identification of the goals and results of research. Limitations of the carried out literature studies stem from heretofore narrow achievements in the application of foresight studies in the area of supply chain and logistics management. Subsequent foresight initiatives in the analysed area should enrich the achievements with solutions of both theoretical-methodological and practical nature (in the form of, for example, good practice).

Keywords: foresight, logistic, strategic management

JEL Classification: L87, L21, L25

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Introduction

The supply chain consists of a group of entities implementing joint actions aimed at creating the value of the final consumer, including activities from obtaining raw materials to delivering the final product to the final customer. The scope of actions undertaken under the supply chain concerns the flow of: products, knowledge, information, and financial resources. The most important features of supply chains include: cooperation and partnership; integration of key business processes; implementation of common strategies; resource sharing; common information systems and a focus on values for the end customer (Witkowski, 2003, Szymczak, 2015).

The development of supply chains is determined by a number of global opportunities and challenges. Despite the significant increase in the importance of this sector, it is still more variable and uncertain. The development of supply chains is conditioned by the dynamics of change and the complexity of the factors of socio-economic development. Undoubtedly, the main challenges determining the development of supply chains include:

- globalization of socio-economic processes causing the supply chain to become longer and more complex;
- changing customer expectations towards faster deliveries and more favourable conditions for implementation of agreements; causing the shortening of product life cycles and focusing on creating the value for customers by the supply chain;
- increasing requirements in terms of minimizing the negative impact of supply chains on the environment;
- the technological orientation of logistics services;
- the growing importance of management in uncertain conditions.

Globalization manifesting itself, among others, in removing barriers between countries and continents, creating new socio-economic systems and, generally speaking, the internationalization implemented at the level of state, markets, industries and businesses, is an important source of implications for the supply chain and logistics processes.

The increasing complexity of supply chains is a subject of interest of researchers from the perspective of measuring this complexity (Drzymalski, 2015), processes of learning of chains as a strategy for adaptation and counteraction to the complexity of the environment (Giannoccaro, 2015), and the proactive management of flexibility of the supply chains (Gunasekaran, Subramanian, Rahman, 2015). Research on the complexity of the supply chain is mainly focused on the analysis of ways to prevent or adapt to the existing conditions. Equally important as the existing complexity are the factors determining the complexity of supply chains in the future. The complexity may be related to the interior of supply chains, as well as the complexity of environmental factors affecting supply chains. Next to complexity, the second problem determining the functioning of the supply chains is the progressive process of enlargement of the supply chains' range. The expansion of the range of supply chains (in the spatial, quantitative and generic dimension), on the one hand, results from the growing diversification of the range of products and services offered by the suppliers (being the result of expectations of the customers and growing customization), and on the other, from growing technological capabilities overcoming the previously existing limitations. Globalization has caused the complexity of business processes by long supply chains with a greater number of entities, relationships between them and the density of the network. Moreover, the nature of processes within the supply chain is changing in the context of a growing number of competitors in the market. Consumers use different media for the purpose of comparing the prices of the provided services, thereby pressuring logistics companies to provide better, faster and cheaper service. According to the research of PostNord (2014), for 55% of respondents from Poland, free delivery of goods was considered to be a very important factor when making purchases.

Generic changes in consumer expectations are varied according to sectors. In relation to the production of, for example, food products, consumers are demanding safe food (Beska, Land, Seuring, 2014), and for the consumers of textile industry, individualization is more important (Kanat, Atilgan, 2014). Delivery time becomes the primary determinant of the quality of services in the supply chains in such sectors as ICT, medical. Research conducted by PostNord (2014) shows that for more than half of respondents from Poland, the maximum acceptable waiting time for delivery is 3 days. For comparison, the automotive industry in times of economic crisis is struggling with drastically changing demand resulting in significant implications for the transport industry (Xia Tang, 2011). Dynamics of changes in the expectations of increasingly demanding customers is a challenge for the entire supply chain. Their early diagnosis, and even prediction becomes a key success factor. Meeting the needs of the final consumer is ever more often considered in the context of the value supplied to him (Szymczak, 2015). Changes in customer expectations can be continuous and sudden, incidental. The second type of change is difficult to predict and entities must develop mechanisms for gathering information on future

potential customer expectations, which is often associated with engaging clients in the process of creating the value.

The value created in supply chains is one of the elements of the global supply chains performance evaluation (Estampe, 2014). Features determining the created value form the basis for the assessment of the results generated by the supply chains. Currently, it is not sufficient to provide the right products at the right time and at the right price. The more important challenge to logistics is to create value for the customer. Often, the use of ICT supports the process of creation of the value for customers (Wamba et al, 2015).

In the context of minimization of the negative impact of supply chains on the environment, the conducted research regards, among others, the development of technologies that reduce carbon dioxide emissions by the transport systems, storing (Pei, Jia, 2015); development of reverse logistics (Rivers Logistics) (Ravi Shankar, 2005; Vahabzadeh, Asiaei, Zail, 2015; Thode Filho et al, 2015; Agrawal et al, 2015), sustainable urban logistics (Morana, Gonzalez-Feliu, 2015), green supply chains (Rostamzadeh et al, 2015), corporate social responsibility in the supply chains or measurement of the impact of the logistics activities on the environment (Mangiaracina et al, 2015). The problems addressed by researchers reflect concern for the present and future state of the natural environment, in the context of a dynamic supply chains development.

The increasing complexity of logistics processes also results from the dynamic development of technologies (e.g. RFID) (Markmann et al, 2013). The development of ICT is, on the one hand, an opportunity, on the other, a threat to the development of supply chains. In the context of opportunities, for many entities ICTs are an element of creating value for customers, e.g., in terms of the convenience of ordering without leaving home, product delivery to the door or delivery time. Risks arising primarily from the need to keep delivery deadlines and follow the development of technology, often requiring large expenditures.

The abovementioned conditions for the development of supply chains confirm the fact of their functioning in conditions of uncertainty. The complexity and dynamics of change of the processes affecting logistics make it necessary to make decisions under conditions of uncertainty (Von der Gracht and Darkow, 2013). Increase in the uncertainty increases the risk to the business. Logistics companies interact with an increasing number of players on the market, and have to manage a larger number of operations (e.g. of intermodal in nature), at longer distances in the conditions of more complex administrative procedures. Eventually, supply chains are becoming more sensitive (Markmann et al, 2013), and the managers are not satisfied with the existing planning tools for forecasting and are looking for new tools in this area (Von der Gracht and Darkow, 2013). In the case of a large dynamic of changes, determining or even estimating the level of probability of occurrence of adverse events becomes difficult, if not impossible. Management under the conditions of uncertainty means that the previously dependable methods in the field of hazard identification and risk assessment do not fulfil their purpose. Mathematical models for identifying, assessing and managing the risk in the supply chain fail (Supply Chain Risk Management - SCRM) (Szymczak, 2015). There is therefore a need for early warning systems (Supply Chain Early Warning System - SCEWS) using heuristics based on creative thinking and logical relationships (Szymczak, 2015).

These conditions cause the future-oriented supply chain management (Future oriented supply chain management - FOSCM) to be a challenge for the supply chain. The companies not prepared for the future will be exposed to an unacceptable risk and higher operating costs, in relation to the organizations that systematically ask themselves questions about the future of logistics (Melnyk et al, 2009). Supply chains should respond quickly to market signals, to quickly identify and exploit emerging opportunities. According to the proposal of Szymczak (2015) the future supply chains are:

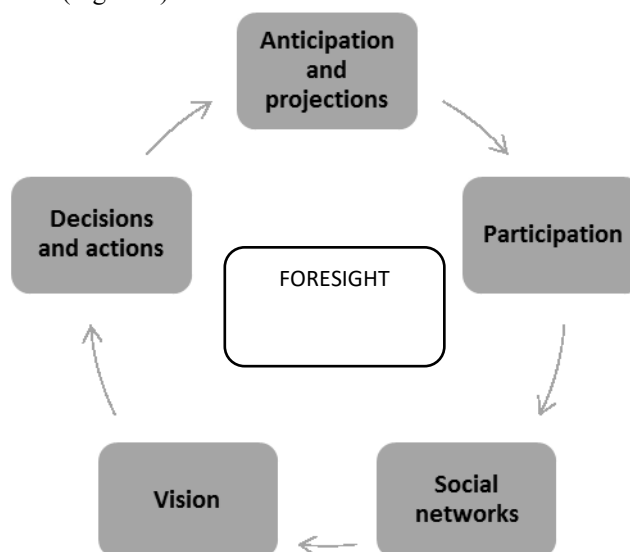
- flexible supply chains - having the ability to adapt to the changing conditions of operation,
- sensitive supply chains - having the ability to respond to customers' needs,
- resilient supply chains - having the ability to cope in the face of the change.

Foresight, successfully used in areas such as research development, regional development, development of technology, may be a tool enabling the prospective management of supply chains.

1 Foresight definition

Among the definitions of foresight as the most famous are considered the one developed in 1995 by B. R. Martin and in 1996 by L. Georghiou. According to B. R. Martin foresight is a process involved in systematic attempts to look at the long-term future of science, technology, economy and society, aimed at identifying strategic areas of science and technology serving to ensure the maximum economic and social benefits (Martin, 1995). Foresight is the approach based on: the future, planning and social networking (Miles, 2002)

Foresight is perceived as a systematic, participatory process of building a medium- and long-term vision, aimed at today's decisions and mobilization of joint actions (Keenan, Miles, 2001; Nazarko, 2011). According to Gavigan et al. (2001) foresight features includes: anticipation and projections, participation, social networks, vision and decision and actions (Figure 1).



Source: based on (Gavigan *et al*, 2001)

Figure 1 Foresight features

Foresight research are based on the following assumptions: 1) multiple futures are possible (i.e. that future developments are uncertain and un-predictable), 2) change (drivers) can be identified and studied, and 3) the future can be influenced (Berger et al, 2008). Foresight enables coping with uncertainty and obtaining the competitive advantage in the turbulent environment (Rohrbeck, 2010). In an ideal world, innovation management and strategic foresight should reinforce each other (Von der Gracht; Vennemann and Darkow, 2010).

Classification of foresight studies can be made taking into account the institutional, territorial and conceptual dimension of foresight. The institutional perspective reflects the type of entities interested in developing and implementing the foresight research results (companies, local authorities). Territorial perspective reflects the spatial object (country, region), which is of interest to the foresight research. The conceptual dimension of foresight studies relates to the subject of the research, i.e. the search for answers to questions about future states of a reality (technology, development of the industry, the transport system, the development of the health system, education) (Ejdys et al, 2015; Halicka et al, 2015; Halicka, 2014).

The experience from the utilisation of foresight studies accumulated up to date indicates a huge potential for its further application. The processes of supply chain management focused on their improvement may be the area of potential application of foresight research.

2 Current foresight applications in supply chain and logistics management field

The literature undertaking the subject of using the foresight methodology for designing and improving the functioning of the supply chain is rather limited. Liebl and Schwarz (2010) demonstrated the underdeveloped linkage with foresight and logistic. Often, however, the term foresight, is not treated as a methodical approach to shaping the future, but as a prospective consideration of particular, changing conditions (Nazarko, 2011).

Rezapour et al. (2011) with the team indicate that the process of designing new supply chains must take into account many factors. One of such factors is the presence on the market of competitors providing the same range of services as a designed supply chain. Foresight as defined by the authors is treated as a dynamic approach to the emergence of new competitors on the market. The literal translation means farsightedness, or analysis (in this case) of the possible emergence of new competitors in the long term perspective (Rezapour, Farahani, 2014). Farsighted competition (competition with foresight) allows operators to anticipate their subsequent actions/reactions to the existing or new competitors in order to maintain their market position (Plastria, Vanhaverbeke, 2008).

Research carried out by Förster and the team (2014) was an attempt to connect elements of strategic issue management (SIM) and corporate foresight methodology in the process of support of decisions regarding the future supply chains. As a part of the corporate foresight approach the authors used the Delphi method for the evaluation of 16 projections by 81 experts in the perspective of the year 2030 relating to the strategic supply chain management. The projections were evaluated by experts, taking into account two criteria: the probability of occurrence of a given phenomenon and the importance of the impact of the phenomenon on the functioning of supply chains. The analysed phenomena related to the following areas: technology, product range, consumer demography, e-commerce, sustainability, value-added services, brand loyalty, brand innovation, collaboration, individualization, concept stores, distribution channels, automated ordering, city supply, IT collaboration, legal restrictions. The conducted analyses allowed to select the projections which are most probable and which have the most significant impact on supply chains, and which will arise in the perspective of the year 2030 (Förster et al, 2014). The weakness of the carried out process was treating foresight methods as tool elements, serving as a source of information for the next process, which was the strategic management. Foresight was not treated as a methodical approach to shaping the future, but as an information tool. Such features of the foresight research as participation, commitment, creating a common vision of the future have been insufficiently exposed.

Friesz et al. (2011) points to the need for the application of foresight, understood as a prospective perception in relation to the performance of supply chains, taking into account the emerging unexpected interference of the operational processes.

The aim of the research conducted by Ejdyś, Nazarko, Nazarko, Halicka (2015) was to present good practices and potential benefits of using foresight studies in the process of creating the future of the broadly understood transport sector. Issues of mobility, transport and logistics constitute an attractive research area for various kinds of forward-looking activities. The future of moving people and goods from one place to another may be seen as a variable that is heavily dependent on a wide array of heterogeneous factors. This provides a space for an interdisciplinary future-oriented reflection where various economic, social, technological, environmental, political, legal etc. trends and phenomena are taken into consideration (Nazarko, Ejdyś, 2011; Ejdyś et al, 2015). The authors analysed two types of foresight projects: corporate foresight – realised by the companies from the transport sector and sectoral foresight, referring to the entire logistics and transport sector at various levels, regional, national and global levels. With respect to corporate foresight they pointed out the good practices resulting from the implementation of projects by companies such as Volkswagen and Daimler Chrysler's Society and Technology Research Group. Authors concluded with the indication of the four groups of potential benefits of foresight studies at the sectoral level which include:

- early warning system,
- foresight as a tool of innovation creation,
- creation of current and future image of the organization,
- engagement and participation tool (Ejdyś et al, 2015).

At the international level, examples of application of foresight studies relate to attempts of developing scenarios of the development of logistics and transportation in the perspective of the year 2030 in the developing countries: Brazil, Russia, India and China. (Hirschinger et al, 2015). For the purposes of the research process the Delphi method was. The reason for the research undertaken by the authors was recognising the importance of the logistics sector in the development of the analysed developing countries. Directing the foresight research on the logistics sector resulted from the following objective reasons:

- effective and efficient logistics systems should not result only in an increase in the volume of trade but also contribute to the growth of export-oriented foreign direct investment; which will lead to an increase in exports and foreign business,
- limitation of logistics capacity and inefficiency of systems will determine the time and cost of logistics services,
- lack of suitable logistics infrastructure (terminals) and other logistic barriers, such as ineffective procedures will contribute to an increase in uncertainty,
- economies of the developing countries reflect the important connections in the network of global supply chains (Hirschinger et al, 2015).

In the authors' opinion, taking into account the above prerequisites, foresight of the structural and institutional changes and limitations of logistics resources becomes a basic requirement guaranteeing success in international supply chains (Hirschinger et al, 2015).

The executors of research for the needs of the German logistics cluster developed IT tool (IT platform) called foresight support system (FSS) (Keller, Markmann and von der Gracht, 2015). Ultimately, in relation to the logistics sector the FSS system should:

- support the processes of creating, combining and processing the information about the desired future development from the perspective of: government, society and technologies;
- stimulate cooperation among stakeholders, aimed at the development of the innovative and competitive potential;
- motivate and stimulate stakeholders to continuous and systematic use of tools allowing for dealing with the future and the strategic options, and supporting innovative processes;
- integrate various tools and applications;
- serve as an educational instrument about the future and teach the ability of the future management in order to overcome the limitations (Keller, Markmann and von der Gracht, 2015).

In the methodological sphere the authors observed that individual methods of foresight are often used, while combinations thereof are poorly recognised. A combination of methods should be aimed at action-oriented foresight process that is focusing the foresight on activities (Keller, Markmann and von der Gracht, 2015). The classification of foresight methods was suggested by Magruk (2011), taking into account the hybrid approach. The author has allocated foresight methods for 10 classes: normative, creative, consultative, multi-criterial, radar, simulation, diagnostic, analytical, revision, strategic.

3 Foresight classification for supply chain and logistics management purposes

Taking into account the current areas of application of foresight research, research objectives and the results, the author made an attempt at classifying the foresight studies focused on supply chain and logistics management. Classification of foresight studies aimed to identify what kind of foresight can be used by a particular user, in order to meet specific targets.

Foresight research can be implemented taking into account the subjective (who is the executor of foresight studies), and the objective (what processes do the foresight studies relate to) approach. In the first approach, individual entities or entire supply chains, regarded as a network of interconnected and cooperating entities, may be entities implementing the foresight research. In the second approach, foresight may concern the processes implemented within the supply chain such as logistics, including transportation, courier, warehouse services.

Taking into account the current typology of foresight research distinguishing regional, strategic (corporate), sectoral, technology foresight, and business information foresight (Nazarko, 2013; Nazarko et al, 2013; Ejdyś, Nazarko, 2014; Ejdyś et al, 2015) three additional types of foresight research, relating to the specificity of the area which is the supply chain and logistics management, and going beyond the criteria for classification of foresight study can be distinguished. These types include:

- chain foresight;
- process foresight;
- strategic project foresight.

Foresight focused on supply chain management (*chain foresight*) will be a new type of foresight, not fitting in the current classifications. It is justified with the following reasons:

- supply chains are increasingly global in nature;
- supply chain is created by many entities co-working with each other;
- processes implemented within the supply chains involve many sectors;
- development of supply chains is dependent on the development of different types of technology;
- supply chains are focused on creating value rather than information.

The use of foresight studies for the purposes of the process of improving supply chains will contribute to implementation of the basic functions of supply chains. Features (attributes) of foresight studies are consistent with the supply chains features (Table 1). Common attributes of foresight and supply chains indicate the usefulness of foresight studies applications for the purpose of improving supply chains management processes.

Table 1 Relationships between foresight and supply chain features

Foresight features	Supply chain features
anticipation and projections	customer value (current and expected) creation
participation	cooperation and partnership
social networks	resources sharing, common information systems
vision	common vision, common strategy
decision and actions	integration of key business processes

The *process foresight* proposal results from the fact of implementation of many processes characterized by the specificity (e.g., transport processes, storage, distribution, etc.) under the supply chain. Especially in a very complex situation, complex supply chains, chain foresight may be impossible to carry out. In such a situation, one can concentrate on the processes implemented within the supply chains.

Strategic project foresight refers to the key projects (investment, non-investment) determining the effectiveness and efficiency of new or planned supply chains and logistics processes. An example of this type of projects can be designing of logistic routes (e.g. Silk Road) or designing of new centres and logistics terminals. The aim of this type of research may be searching for business partners, economic integration of the countries participating in the project and obtaining the involvement of all stakeholders convinced of the rightness of the undertaken actions, bringing benefits to all the participants (win-win solution). In particular, with respect to strategic projects characterized by high financial expenditures, long-term perspective taken into account at the stage of planning appears to be necessary.

Table 2 presents an extended classification of foresight studies taking into account the specificity of the area of management of the supply chain and logistics management.

Table 2 Foresight classification for supply chain and logistics management

Foresight performer/user	Technology foresight	Strategic (corporate)	Regional foresight	Sectoral foresight	Business information foresight	Chain foresight	Process foresight	Strategic project foresight
Government (regional)								
Government (central)								
Company								
Supply Chain (network)								
Trade, business, industry associations								

Source: Authors'.

Conclusion

Taking into account the acknowledged in the literature and used in practice types of foresight projects and various application areas of foresight research, the author has attempted to expand the existing classification of foresight studies with three types taking into account the specificity of determinants of supply chains and logistics processes: chain foresight, the process of foresight and strategic foresight project.

The internal (between participants of supply chains) and external (mainly resulting from globalization processes) conditioning causes the functioning of supply chains to be taking place under the conditions of uncertainty and increased risk. This is caused by the dynamics and complexity of environmental factors. Only early diagnosis of impending changes can prevent the loss of competitiveness at the level of enterprises and supply chains.

Foresight as a tool for early warning, allowing for the identification of weak signals and wild cards while at the same time engaging stakeholders will allow for creating the future image of organization, the supply chain - in the form of alternative scenarios. Shaping of the participatory created future is left to the participants of the foresight process.

Since the conducted studies are theoretical they require direction of further research towards the process of operationalization of the foresight research methodology, aiming at the selection of research methods, selection of experts, identification of the goals and results of the research.

Limitations of the carried out literature studies stem from heretofore narrow achievements in the application of foresight studies in the area of supply chain and logistics management. Subsequent foresight initiatives in the analysed area should enrich the achievements with the solutions of both a theoretical-methodological and practical (in the form for example of good practice) nature.

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*COOPERATION BETWEEN COMPETING COMPANIES AS A FACTOR OF
TECHNOLOGICAL ENTREPRENEURSHIP CREATION*

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Abstract

Purpose of the article Critical analysis of literature indicates that the attention in approaches to defining technological entrepreneurship is primarily on the interaction between the world of science and technology and the world of commerce. According to the authors of this article the level of cooperation of competing companies also has an impact on the development of technological entrepreneurship.

Methodology/methods The article uses the method of critical analysis of literature and statistical analysis of data obtained from a survey conducted in 381 Polish companies of industries leading in Podlaskie: food, wood and furniture, construction, metal and machine. The results of the survey were coded, and primary data obtained was subject to organizing, grouping and analysis using statistical tools such as: tabular form of data presentation; descriptive statistics; non parametric statistics.

Scientific aim The aim of the analysis carried out in this text was to point out the influence of cooperation between operators competing in the industry on the development of technological entrepreneurship.

Findings The obtained results show that in the group of the studied companies there is a small or very small degree of interest in taking up cooperation with operators competing in the industry. The higher the rating of the current level of contacts with competitive entities, the greater was also the tendency to cooperate in the future. In the context of technological entrepreneurship the available resources may be necessary for reaching the objectives of individual companies. The assessments indicated no willingness on the part of competing companies to get engaged in stronger cooperation relationship, characterized by engaging their own resources.

Conclusions In order to improve cooperation between competing companies more proactive approach of the research centers and business incubators is recommended in linking the potential areas of cooperation between economic entities, for example through their participation in the results of research.

Keywords: entrepreneurship, technological entrepreneurship, cooperation, competing companies, competing

JEL Classification: L22, L26, M19

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Introduction

Advanced technologies are today an enormous resource for development of both the major world economies and the SME sector. That is why researching technological entrepreneurship becomes such an important issue in the growth of competitiveness. Very often, in fact, no further development of the entities is possible without taking significant steps towards modernizing the technology. Therefore, in this context important are both identification of actions to support the development of technological entrepreneurship, and identification of a number of barriers that may limit this phenomenon.

The aim of this article is to point out the influence of cooperation between operators competing in the industry on the development of technological entrepreneurship. The article uses the method of critical analysis of literature and statistical analysis of data obtained from a survey conducted in 381 Polish companies of industries leading in the Podlaskie province.

1 Literature review

The starting point for defining the concept of technological entrepreneurship is the definition of entrepreneurship, which for several years has become a popular field of research (Keskin and others, 2015), while in the literature it has been present for more than two hundred years (Örnek, Danyal, 2015). Most often entrepreneurship is understood as a set of behaviors, actions and interactions aimed at the creation of (implementing) projects to achieve certain values in conditions of uncertainty and risk (Bojewska, 2002).

It can be considered in terms of three categories: attitudes, behavior and process (Piecuch, 2010; Piasecki, 1999; Korol, Kusideł, Szczuciński, 2016; Harkema, Popescu, 2015). The most popular approach is the process approach (Gartner, 1985; Bhave, 1994; Bygrave, 2003; Shook et al., 2003). According to this approach entrepreneurship is understood as a process of realization of projects, including the perception of opportunities for use, the decision to use it and incur some risk (Escat Cortés, 2014), which eventually should bring certain benefits (Kraśnicka, 2002).

For several years, technology has been one of the most valuable assets of the organization, contributing to its development and increase in profitability (Zahra, Kirchoff, 2005). Therefore, understanding of how organizations deploy their technological resources in order to achieve a competitive advantage is currently the subject of important research (Huang, 2011). In addition, literature emphasizes the role of the impact of technology on the development of skills and competencies and acquisition of opportunities (Lee, Lee, Pennings, 2001; Martín Rojas, García Morales, García Sánchez, 2011) influencing the organizational efficiency (Antoncic, Hisrich, 2001; Hayton, 2005) – the concept of technological entrepreneurship, which is a specific type of entrepreneurship becomes an important issue.

This phenomenon, similarly to entrepreneurship, has been studied in many ways and at different levels, and it was presented as a system (Abetti, 1992; Kenney, Von Burgh, 1999), a rule (Zhang, Xuebing, Li, 2008; Yu, Stough, Nijkamp, 2009; Antoncic, Prodan, 2008; Petti, 2009) or an individual attitude (Dorf, Byers, 2005; Bird, 1989).

Technological entrepreneurship is a tool to transform research and the potential of scientific institutions in goods and services, which directly and indirectly increases the benefits for consumers and results in faster economic growth in the future. The consequence is the transfer of new knowledge to private companies, which raises their productivity and in the long term, leads to the formation of new businesses, the increase of investments and employment, also in the fields of high technology (Banerski et al., 2009). It is often understood as the process of motivating and steering research in the direction of increasing their practical utility, and then transferring the results of research into the economic sphere in order to increase innovation and competitiveness of goods and services. This activity is very complex and multi-stage. Its development requires effective cooperation between the areas of science, capital market institutions and enterprises (Lachiewicz, 2009).

Technology resources constitute one of the key factors of competitive advantage (Rochlin, 2006) and technological entrepreneurship is one of the conditions for enterprises' success, because it is the process of creating new products, using modern technology, flexible response to changes in the market, but also introducing innovations in all areas of the company and at its cooperators (Grudzewski, Hejduk, 2008). It focuses on activities aimed at a more effective combination of the scientific potential of universities, scientific research centres and the market and business. The aim is to ensure appropriate conditions for commercialization of research results and their usage in enterprises through modern cooperation between research centres, capital market institutions, business related spheres and the companies involved in the manufacture and sale of technologically advanced products and services. Innovations play the main role in the process of technological entrepreneurship. They are the result of a series of activities of a scientific, research, technical, organizational,

financial or commercial nature and their objective is to develop (improve), and then introduce new products (Flaszewska, Lachiewicz, 2013).

The development of technological entrepreneurship is associated with the simultaneous interaction of many people and businesses. Companies are the main operators in economy. Therefore, the processes taking place among them are crucial to the economy (Korol, Kusideł, Szczuciński, 2016).

This is particularly important for SMEs sector, since small and medium-sized enterprises, after reaching a certain level of development, need modern technology to develop further. However, too small potential prevents them from carrying out independent research and development activities. In addition, these are very often companies operating in the market for at least several years and therefore the technologies and technological equipment owned by them are outdated, which prevents them from meeting the expectations of the market.

On the other hand, among the SME sector a high propensity to innovative activities and active marketing new products is often observed. In case of smaller entities the proximity to the market and customers, fast information and decision making process, favorable atmosphere of mutual work and mobilization contribute the development of entrepreneurship and creativity. It can therefore be assumed that technological entrepreneurship will be one of the most critical factors determining their functioning in the near future (Flaszewska, Lachiewicz, 2013). In addition, small and medium-sized enterprises by implementing a number of new applications and new technologies dynamize changes in the economy, which take place faster and on a larger scale thanks to that (Łyżwa, 2014).

The basic conditions that must be met by the technology entrepreneurial organizations are, above all, creativity, perseverance in the search for interesting places for research and support researchers, openness to cooperation and self-improvement, intuition to perceive points of contact between knowledge, technology and market needs, a variety of contacts and the ability to integrate diverse science environments, flexibility of actions, negotiations and persuasion skills and commercialization (Lachiewicz, 2009).

In the process of technological entrepreneurship development there are therefore diverse types of inter-organizational relationships and it seems that the most important interactions will be based on cooperation, so mostly on positive economic and cooperative interaction. They are an important manifestation of entrepreneurial skills that include engaging in occasions appearing in a dynamically changing environment, while not reducing the resources currently controlled (Cygler, 2009; Stevenson, Roberts, Grousbeck, 1994).

In all approaches to defining technological entrepreneurship the attention is primarily on the interaction between science and technology and the commercial world. Researched are the relationships and dimensions of cooperation, especially at the meeting point of science, capital market institutions, public institutions and enterprises. According to the authors of this article also the level of cooperation between the competing enterprises influences the development of technological entrepreneurship.

2 Research methodology

The further part of this article presents some results of research carried out as the international research project, conducted under the agreement between the Polish Academy of Sciences and the National Academy of Sciences of Belarus for years 2014-2016 „*Readiness of enterprises to create cross-border networking*”. Quantitative research carried out in the late 2014 and early 2015 covered 381 Polish companies of industries leading in Podlaskie.

As a result of literature analysis and ongoing discussions the factors shaping cooperation between the operators have been determined, in the context of technological entrepreneurship development. It should be noted that the study was not of a representative nature. In respect of the conducted analysis the results can not be generalized to the entire population. The purposeful selection was used, limiting the research to specific entities, whose opinion may be authoritative and most desirable.

Considering the literature it was assumed that taking certain forms of mutual cooperation with competitors in the industry can increase the chances of positive implementation of innovations. It may therefore have a beneficial effect on the development of technological entrepreneurship in the various entities, which daily activities are in competition. Operators competing in the sector are not strangers to each other, and cooperation in different types of structures, especially these of a network nature, can increase the effect of mutual support through possession of facilities in the form of the potential of other entities.

Construction of the research questions included the importance of different reasons for the willingness to start mutual co-operation between competitors. In addition, the impact of various factors on decisions about potential cooperation in implementing joint projects was taken into account.

In this part of the study the attention was first of all focused on the factors of a strategic nature, which have an impact on various aspects of making decisions about getting engaged in joint projects. Defining the strategic factors in relation to particular sectors has allowed for identification of areas of potential cooperation and the importance of these factors for the development of technological entrepreneurship.

Analyses regarding the potential cooperation between competitive companies, in the context of the impact on the technological entrepreneurship development, were aimed at getting answers to the following research questions:

- 1 How do respondents assess the current level of co-operation of their companies with competing companies? What is the degree of interest of the studied companies in strengthening cooperation with competitors in the near future?
- 2 To what extent do the individual factors influence the current level of cooperation between the respondents' companies and competitive enterprises, in the context of the technological entrepreneurship development?
- 3 To what extent the positive changes in various factors may contribute the improvement of the current level of cooperation between the respondents' companies and their competitors in the near future?

The results of the survey were coded, and primary data obtained was subject to organizing, grouping and analysis using statistical tools such as: tabular form of data presentation; descriptive statistics; nonparametric statistics. Analysis was performed using statistical package the STATISTICA version 12.5.

3 Discussion on the obtained results

In the context of assessing the prospects for technological entrepreneurship development in enterprises operating in Podlaskie province, an important element of the study was the issue of assessing the current level of cooperation and the degree of interest in its tightening in the future.

The studied companies were subjected to self-esteem through the prism of the indicated factors. The respondents evaluated the above mentioned factors in the seven-point rating scale (Table 1).

The obtained results indicate that respondents rated low the current level of cooperation with competitors (average rating - 2.8). At the same time they were quite unanimous in their assessments, which is indicated by the value of a statistical indicator of response variations ($V = 51,9$). It is significant that the largest group of those who responded the survey indicated even very low level of current cooperation with competition (dominant $D = 2$ for a group of 94 entities participating in the survey). A little more optimistically we should look at the results of the evaluation of the interest in strengthening cooperation with competitors. The average note rose to 3.01, leaving the median unchanged.

Among the surveyed entities competing in the industry the interest in strengthening mutual cooperation in the future in relation to the present was evident. Still, the dominant group of respondents indicated this need at only secondary level ($D=3$).

Taking the responses into account, the statistical evaluation was made of the impact of current level of cooperation on the possibility of its tightening in the future. The value of the Spearman's rank correlation indicates a significant level of the studied features interdependence. It can be therefore concluded that the increase in assessments of the current level of cooperation is accompanied by fairly strong increase in the interest in strengthening this cooperation within the next 2-3 years.

We should presume, basing on the literature analysis, that the results of previous cooperation can affect an increase in the degree of interest in its strengthening - felt directly and indirectly by cooperating entities. This depends largely on mutual expectations and the expected and actually received benefits from the cooperation

Table 1 Evaluation of the current level of cooperation and the degree of interest in its strengthening in the future.

	\bar{x}	M_e	D	n_D	s	V
Level of cooperation	2,80	3,00	2	94	1,45	51,90
Degree of interest in strengthening cooperation within the next 2-3 years	3,01	3,00	3	93	1,51	50,20
Spearman's rank correlations						
Evaluation of the current level of cooperation and possibilities of its strengthening in the future						0,653550

Source: own work

The arrangement of interacting factors that affect the establishment and continuation of cooperation constitutes a mechanism of mutual cooperation between competing companies. Taking into account the previously obtained results that indicated a low level of current cooperation between competing companies in the surveyed industries, the factors that have an impact on this state were identified. Examined was also the extent to which the individual factors influence the current level of cooperation between the respondents' companies and their competitors in the context of the technological entrepreneurship development. The analysis of this issue focused primarily on factors related to cost reduction, rise of innovation potential, improvement of products quality, access to the competitor's resources, possibility of implementation of joint investment projects, possibility of implementation of joint research and development works. The results are presented in Table 2.

Table 2 Factors influencing the current level of cooperation

Factors	\bar{x}	M_e	D	n_D	s	V
Values of assessments						
Extending the sales market	3,14	3,00	1	100	1,84	58,47
Joint advertising activities / product promotion	2,51	2,00	1	151	1,62	64,56
Subcontracting	3,07	3,00	1	107	1,73	56,33
Operation cost reduction (coordination of purchases, joint transport, storage)	2,86	3,00	1	127	1,74	61,03
Rise of innovation potential (faster generating and implementing product and technology innovations)	2,80	3,00	1	120	1,67	59,62
Products/services quality improvement	3,09	3,00	1	109	1,78	57,64
Access to the competitor's resources (personnel, technology, machines, equipment etc.)	2,75	2,00	1	128	1,71	62,28
Possibility of realization of bigger contracts/projects	3,38	3,00	1	90	1,87	55,22
Possibility of participation in tenders/projects	3,17	3,00	1	105	1,86	58,51
Possibility of implementation of joint investment projects (ex. joint purchase of expensive technologies, equipment, etc.)	2,72	2,00	1	148	1,80	66,22
Possibilities of implementation joint research and development activities	2,59	2,00	1	147	1,66	63,86
Access to financial institutions, support programmes	2,83	2,00	1	131	1,82	64,15
Influencing the national and local authorities	2,79	2,00	1	129	1,74	62,22
Experience from previous cooperation	3,08	3,00	1	100	1,75	56,79

Source: own work.

Among the surveyed factors there was no clearly optimistic assessment. All the factors were evaluated in seven-point scale from 2.59 to 3.09, taking into account the average of the ratings. Anxiety about the mechanisms of cooperation with competitors may raise low assessments in the areas that have a particularly significant impact on joint actions such as the implementation of joint investment projects (average 2.72), undertaking joint research and development activities with competitors (average 2.59). Slightly higher were rated the factors related to the access to the resources of a competitor (2.75) and the increase of innovation potential (2.80). These areas are associated with a necessity of higher level of commitment to cooperation, and hence – its greater potential for sustainability.

Cooperation and achieving its benefits occur when companies have specific resources of the complimentary nature. In the context of technological entrepreneurship the available resources may often be necessary in sum for reaching the objectives of individual companies. This leads to strengthening the mutual cooperation between the parties, creating a new quality of resources. The cooperation may also appear if enterprises have the same resources, but in an amount insufficient to meet some objectives. The combination of identical resources strengthens the merged entities, creating a new amount of these resources, for example technological potential, which can be used by each of the cooperating parties (Strzyżewska, 2011).

The assessments may indicate no willingness on the part of competing companies to get engaged in stronger cooperation relationship, characterized by engaging their own resources and considerable difficulty in breaking it. This requires the presence of trust and taking into account the interests of the cooperating parties. This is also confirmed by the results of other research, where the main factor that limited the desire to cooperate was very low confidence or even lack of any trust in potential contacts between companies competing in the industry.

Negative picture of the current cooperation between enterprises competing in the researched fields is not concealed by the fact that in the area of other factors, the answers were more encouraging. Top rated factors related to cooperation in the context of improving the quality of products and services (average 3.09), subcontracting (average 3.07) and the feasibility of larger projects (average answer 3.38). These are the areas of cooperation that do not need the shared resources to such an extent as in the case of previously indicated, lower rated factors. It is significant that in the case of all the factors the dominant amounted to 1, indicating that for a significant group of respondents there is totally no impact on the level of existing cooperation.

The respondents were also asked to assess the impact of positive changes in the various factors on improvement of their level of cooperation with the competitors in the industry within the next 2-3 years (Table 3). It can be seen that for all of the factors the level of assessments is higher than for the current cooperation. Nevertheless, these values are relatively low and range from 3.00 (for the factor of "subcontracting") to 3.82 (for the factor of "possibility of implementing larger projects"). The highest increase in the assessment of the impact of changes in the factors on improvement of cooperation with competitors in the future concerned reduction of operating costs and increase of innovation potential. This indicates mainly on the market motivations – the potential for using the results of cooperation to strengthen their own competitive position in the industry (Table 3).

Table 3 Degree of the impact of positive changes in factors on improvement of cooperation in the future

Factors influencing the level of cooperation	\bar{x}	Me	D	n_D	s	V
Degree of the impact of positive changes in factors on improvement of cooperation in the future						
Extending the sales market	3,65	4,00	1	72	1,95	53,45
Joint advertising activities / product promotion	3,17	3,00	1	96	1,74	54,85
Subcontracting	3,44	3,00	1	78	1,78	51,86
Operation cost reduction (coordination of purchases, joint transport, storage)	3,58	4,00	1	78	1,84	51,36
Rise of innovation potential (faster generating and implementing product and technology innovations)	3,41	4,00	4	88	1,80	52,70
Products/services quality improvement	3,52	3,00	1	80	1,88	53,33
Access to the competitor's resources (personnel, technology, machines, equipment etc.)	3,24	3,00	1	95	1,81	56,03
Possibility of realization of bigger contracts/projects	3,83	4,00	5	79	1,84	47,99
Possibility of participation in tenders/projects	3,60	4,00	1	75	1,84	51,20
Possibility of implementation of joint investment projects (ex. joint purchase of expensive technologies, equipment, etc.)	3,28	3,00	1	97	1,83	55,95
Possibilities of implementation joint research and development activities	3,14	3,00	1	99	1,76	56,22
Access to financial institutions, support programmes	3,38	3,00	1	90	1,85	54,76
Influencing the national and local authorities	3,21	3,00	1	96	1,83	57,02
Experience from previous cooperation	3,34	3,00	1	87	1,83	54,84

Source: own work.

In order to answer one of the research questions the Spearman's rank correlation was made in regard to the assessments of the respondents. It is clear that the increase in assessments of the level of impact of individual factors on the current level of cooperation is associated with an increase of the average values of the assessments of the level of the impact of positive changes in these factors on the establishment of cooperation in the future. Particularly high is the positive dependency related to the factor associated with previous experience of

cooperation (Table 4). This is one of the mechanisms associated with the fact that a positive history of previous relationships results in the conviction about the reliability of the partner in regard to the compliance with the commitments. This gives a valuable hint for initiatives related to the development of cooperation between competitors. Establishing contacts and positive experience in reaching joint goals will result in a greater tendency to repeat such behavior (search for the cooperation partner among competitors) on the occasion of implementation of further projects.

This can help in changing the awareness of business owners as to shaping relationships in the industry and opening up to a new approach in dealing with competitive companies. As mentioned above - this is especially important for small businesses with a low potential that in dealing with competitors may create a new quality of their resources, sharing them for implementation of joint tasks. The entities competing in the industry, through mutual positive contacts, together can more effectively prepare to defend against the effects of changes in the turbulent environment, eliminating their lack of specialist knowledge in the field of introduction of modern technologies, innovative products or organizational solutions.

Table 4 Spearman's rank correlations for the assessments of individual factors of the current level of cooperation and possibilities of improving it in the future as a result of positive changes in the factors

Factor	Rank
Extending the sales market	0,678251
Joint advertising activities / product promotion	0,664039
Subcontracting	0,656036
Operation cost reduction (coordination of purchases, joint transport, storage)	0,651404
Rise of innovation potential (faster generating and implementing product and technology innovations)	0,652414
Products/services quality improvement	0,663178
Access to the competitor's resources (personnel, technology, machines, equipment etc.)	0,684347
Possibility of realization of bigger contracts/projects	0,655362
Possibility of participation in tenders/projects	0,682580
Possibility of implementation of joint investment projects (ex. joint purchase of expensive technologies, equipment, etc.)	0,627716
Possibilities of implementation joint research and development activities	0,639891
Access to financial institutions, support programes	0,646367
Influencing the national and local authorities	0,695955
Experience from previous cooperation	0,730928

Source: own work.

Conclusions

The text highlights the important problem of willingness to cooperate of a group of competing companies. In the process of technological entrepreneurship development important are the interactions between operators competing every day which are based on cooperation. These include attitudes such as economic cooperation and cooperation that constitute an important manifestation of entrepreneurial skills. This is particularly important in the case of the smaller enterprises group, which very often, after reaching a certain stage of development, need new technologies in order to grow further. With too little potential they are not able to conduct research and development activities independently and at the same time modernize their technology and technological equipment that may already be outdated. At this point, there is a chance for the joint use of resources by the competing companies.

This study was conducted on a group of companies that represent the industries leading in the region of north-eastern Poland. The results show that in the researched group of entities there is a small or very small degree of interest in undertaking cooperation with operators competing in the industry. The higher was the rating by the surveyed companies of the current level of contacts with the competing entities, the greater was also the tendency to cooperate in the future. From the perspective of the technological entrepreneurship development, as

an important carrier of innovation, there are no optimistic observations. It seems that the mechanisms of competition and achieving a better position by the surveyed industries outweigh the need for cooperation between the operators. The owners of the researched entities lack a positive reflection on the potential benefits when entering into various forms of cooperation with competitors. It is necessary to overcome the barriers associated with the desire to establish contacts on principles other than just collaboration in the supply chain or combating competition. In the absence of a "critical mass" within the group of entities it seems to be advisable to undertake such an initiative by the outdoor entities of a neutral nature from the point of view of the industry. More proactive attitude of the research centers and business incubators is recommendable in connecting potential areas of cooperation between entities, for example through their participation in the results of research work.

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*SMART SPECIALIZATION IN THE CONTEXT OF INNOVATIVENESS IN THE
REGIONAL SPATIAL MANAGEMENT*

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Abstract

Purpose of the article This study aims to examine the role of the smart specialization in regional spatial management. The research shows the relationships between the coverage planning and the innovativeness of Polish regions. It also identifies important elements characterizing the smart specialization such as Key Enabling Technologies (KET) and regional research and innovation strategies for Smart Specialization (RIS3). This paper explains the meaning of the term smart specialization in the context of regional management through an approach based on a scientific literature review as well as official documents of international institutions. Theoretical part of article describes a new mechanism for stimulating regional development in EU and empirical study presents analyzing the innovativeness of Polish regions.

Methodology The test procedure used taxonomic methods such as Ward's hierarchical analysis and deglomerating k-means analysis.

Scientific aim The main goal of the research is to analyze and evaluate of the innovativeness 16 Voivodeships in Poland.

Findings The main result is the author's classification of Polish regions in view of their innovativeness.

Conclusions This work provides policy makers and city managers with useful guidelines which can be used to define and plan actions directed at the most appropriate domains of implementation of the concept of smart specialization.

Keywords: smart specialization, regional development, spatial management, innovativeness, taxonomic methods, classification.

JEL Classification: O18, O31, R58.

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Introduction

The growth of innovation level constitutes the development of country both in economic, social and territorial way. Implementing innovations is to a large extent a key factor in building competition of regions. Regional Innovation Strategy is one of the most crucial instruments of creating and supporting innovations based on the progress of smart specializations and transfer technology. Smart growth referring to knowledge and innovation is an important topic in current European Union regional development policy (European Commission, 2012; Guide to Research ..., 2012). The Europe 2020 strategy defines goals for the whole European Union, the one of which is to increase the overall level of public and private investment in research and development up to 3% of EU GDP ensure better conditions for R&D and innovation (European Commission, 2010).

Obviously the key motive for smart specialization is to increase competitiveness of the country and region. The scope of dimensions and their priorities are the subject of debates in scientific literature. The goal of the article is to examine the concept of smart specialization. The discussion within the study will be concentrated around some key questions: what does smart specialization really mean? Why a new approach is needed within regional development? What does connected smart specialization and spatial management? This work aims to analyze and evaluate the innovativeness of regions in Poland. The research included 16 Polish voivodeships described using 21 indicators. The main result is the author's classification of Polish regions in respect to their innovativeness. The author used statistical data from the Local Data Bank of the Central Statistical Office and reports prepared by the Institute of Geography and Spatial Organization of the Polish Academy of Sciences and the European Union. The test procedure covered the taxonomic methods such as Ward's hierarchical analysis and deglomeration k-means analysis.

1 Background literature

In the current 2014-2020 financial perspective regional research and innovation strategies for smart specialization and Key Enabling Technologies play a crucial role in boosting the development in the regions of the European Union (Todeva 2014; Boschma 2014; Aranguren & Wilson 2013; Iacobucci 2014; Morgan 2015). Smart specialization is promoted by the Synergies Expert Group, established by the European Commission's Directorate-General for Research and Innovation and is considered an important component enabling synergies between Horizon 2020 and structural funds in the context developing potential and striving for perfection. Also, the Committee of Regions, World Bank and OECD engage in promoting smart specialisation by means of comparative research including all the European Union regions.

The theoretical premise for specialization in the development policy of the region are the result of among others: Hirschman's polarization concept, centre-periphery concept by J. Friedmann, industry clusters by M. Porter, business cycle theory explained by J. Schumpeter, learning region by R. Florida. Analysis of modern development concepts suggests that public intervention aimed at supporting selected industries (specialization and concentration of resources) is an important factor in the development of the region, notably through: support for entrepreneurship and inhabitants' creativity leading to the development of innovative products and process and creation of growth centres and subsidiary support poles.

The concept of smart specialization was launched in 2007 by a team of economists known as "Knowledge for Growth Expert Group" by European Commissioner for Research - J. Potočník. Smart specialization is a process of priority-setting in national and regional research and innovation strategies in order to build place-based competitive advantage and help regions or countries develop an innovation-driven economic transformation agenda (Foray, 2009; Foray et al., 2009; Castillo et al., 2011; Morgan, 2013). The idea of smart specialization is based on the assumption that it is impossible for countries or regions to achieve everything in the area of science technology and innovation. Therefore, there is no other alternative than to attempt to make a thoughtful prioritization of strategic goals and to concentrate resources in certain domains of expertise (Foray, 2011; McCann & Ortega-Argiles, 2011; Foray et al., 2012; Coffano & Foray 2014). The advantages of smart specialization is to achieve of a more productive use of the potentials of each region by fostering innovation through the use of investments into human capital and research matched to each region's innovation profile.

Briefly, smart specialization is a strategic approach to economic development through targeted support for research and innovation. It involves a process of developing a vision, identifying the place-based areas of greatest strategic potential, developing multi-stakeholder governance mechanisms, setting strategic priorities and using smart policies to maximize the knowledge-based development potential of regions (Foray & Goenaga, 2013). While some authors consider the concept of smart specialization a bit obscure and problematic, it has nevertheless initiated a considerable academic debate concerning specialization and diversification. Despite this on-going debate and the challenges smart specialization poses toward practical development it has gained

significant political and analytical prominence within the European Union (Navarro et al., 2011; McCann & Ortega-Argiles, 2014). In fact, although regions in many parts of the world are showing interest in the smart specialization policy approach, Europe is clearly taking the lead in this type of strategy by making smart specialization the basis for the European Structural and Investment Fund interventions in R&I as part of the future Regional and Cohesion Policy's contribution to the Europe 2020 jobs and growth agenda'. In this context, smart specialization is defined as a process of developing a vision, identifying competitive advantage, setting strategic priorities and making use of smart policies to maximize the knowledge-based development potential of any region. Such a process has two domains (Foray, 2014):

- 1 transforming regional structures (diversification, modernization, transition) and
- 2 building capabilities in new fields which most frequently appear at points of contact of existing sectors and new methods to invent and to innovate (general purpose technology, innovative design, innovative business model, etc.).

The success of smart specialization consists of exploration of new activities and discoveries which aim to induce certain kinds of structural changes within the economy. The outcome of the process is thus much more than only technological innovation, but rather structural evolution of the entire regional economy. There are different structural transformations which can be identified as (Neffke et al., 2009):

- transition is characterized by a new domain emerging from existing common industrial beginnings (a collection of R&D, engineering and manufacturing capabilities that sustain innovation);
- modernization occurs apply when the development of specific applications of general purpose technology produces a significant impact on the efficiency and quality of an existing sector. A good example of this is nanotechnology application to improve process and products in the cosmetic industry. Other examples, such as ICT applications in tourism and the exploration of biotech potential in the agrofood processes;
- diversification concerns potential synergies between an existing activity and a new one. Such synergies make the move towards a new growing market attractive;
- radical foundation does not have a direct link with existing structures. It is important to have some sort of typology of structural changes because it will provide policy makers with the possibility to think ahead and decide in what kind of sectors entrepreneurial discovery could be socially viable.

All cases described exemplify a process of transformation that links existing production structures to new domains of potential competitive advantages. Forms of evolution which originate from existing productive capabilities are stimulated by the integration of new knowledge. However, the last case of transformation opens up opportunities to be explored unrelated to any existing productive assets.

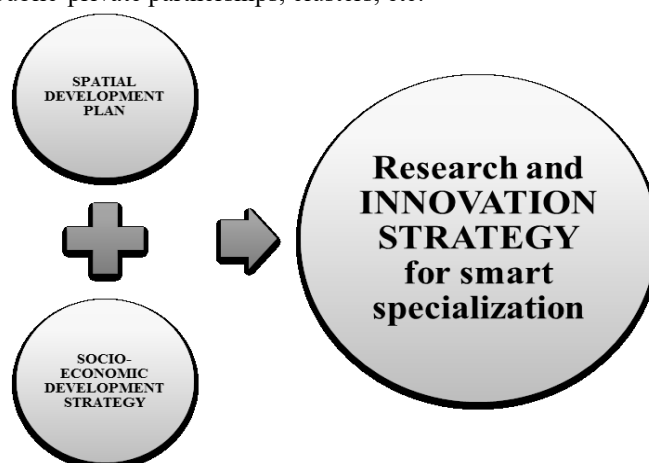
Smart specialization and innovation are enabling access to Key Enabling Technologies, nanotechnology, micro- and nanoelectronics, industrial biotechnology, photonics, advanced materials, advanced manufacturing technologies, and are a complementary perspective to sectoral prioritization (Komninos et al., 2014). However, in selecting activities for key specializations there are barriers to overcome which are related to the availability of Key Enabling Technologies, commercial deployment of R&D, and the establishment of effective knowledge transfer mechanisms. Spatial proximity, regional know-how about Key Enabling Technologies, established university-industry linkages, operating technology intermediary organizations, are external factors which affect the absorptive capacity of industrial sectors. Equally important, for non-technological innovation, is the varying capability of industries to deploy ICT platforms, smart environments, virtual networks and social media, engaging end-users and the population into open innovation initiatives.

Smart specialization is a response to the acknowledged gap of productivity between EU and US economies (McCann & Ortega-Argiles 2011). The most developed regions are supposed to specialize in key enabling technologies, the less developed ones should specialize in co-inventions (applications of KETs). According to the Polish National Smart Specialization Strategy were identified eighteen smart specializations and grouped into five thematic areas such as (I) healthy society; (II) agri-food, forestry-timber and environmental bioeconomy; (III) sustainable energy; (IV) natural resources and waste management; (V) innovative technologies and industrial processes (Krajowa strategia, 2014).

Smart specialization strategies involve cooperation between businesses, research centers and universities to identify the most promising areas of specialization in the region, but also the weaknesses that hamper innovation, taking into account the profile of the regional economics. Elements of smart specialization strategies include: innovation cluster for regional growth, innovation-friendly business environments for SMEs, lifelong learning in the field of research and innovation, research infrastructure and attractive competence centers at regional level, creativity industries.

Policy makers need assistance from the academic community in order to apply effective and relevant tools for the assessment and measurement of the smart potential of a region. Sandu believes that these indicators may consist of (Sandu, 2012):

- 1 indicators describing the current research and innovation potential of a region and the level of R&D and technologic specialization. In this case, we could build upon existing indicators such as patents, publications, RDI expenditures, RDI human resource, new products and technologies, etc.;
- 2 economic indicators that may reveal an original industry, be it new or traditional, but with relevant possibilities of development on the basis of research and innovation and with good perspective such as predictable market share, turnover, productivity, etc.;
- 3 indicators for the assessment of the cooperation level between specific R&D of business environment, of the opportunities for synergistic relations with other stakeholders, for instance number of coinventions, copublications, cooperation agreements, shared projects, spin-off companies, public-private partnerships, clusters, etc.



Source: author's own study.

Figure 1. Determinants of innovation strategy for smart specialization

Innovation strategy for smart specialization is based on the spatial development plans and socio-economic development strategy. Figure 1 shows the relationship between spatial management and innovation strategy. Smart specialization has become an important strategy of European regions. Even though many European regions have developed smart specialization, it is necessary to evaluate the possibilities of implementation, to monitor and coordinate.

2 Methodology of investigations

The basic problem encountered while preparing the research was defining the adequate measures of smart specialization, since these are complex phenomena for which adequate measures are difficult to find. The study presented in this paper was designed at a regional level (NUTS 2). The availability of data at this level is limited and not all smart specialization indicators are available.

The study covered 16 Polish Voivodeships assessed in terms of innovation. Indicators for the analysis have been calculated on the basis of statistical data from the Local Data Bank of the Central Statistical Office from 2014. Based on the review of literature mentioned above, the author adopted the following indicators as twenty one diagnostic variables:

- X₁ - the share of the area covered by local plans in the total city area in percent;
- X₂ - the share of the employed in R&D in economically active population in percent;
- X₃ - the share of the employed in R&D in employed total in percent;
- X₄ - students of doctoral studies per 10 thousand population;
- X₅ - higher school students per 10 thousand population;
- X₆ - the share of higher school students per 10 thousand population aged 19-24 years ;
- X₇ - the share of graduates of smart specialization fields;
- X₈ - students of post-graduate students of doctoral studies per 1000 population;

- X₉ - the share of patent applications in total number of national patent applications in percent;
- X₁₀ - national patent applications per 1 million populations;
- X₁₁ - the share of patents granted in a total number of patents granted for inventions national in percent;
- X₁₂ - granted national patent per 1 million population;
- X₁₃ - academic teachers per 1 thousand students;
- X₁₄ - intramural expenditures on R&D per capita;
- X₁₅ - intramural expenditures on R&D per employed person in R&D;
- X₁₆ - the share of intramural expenditures on R&D business enterprise sector as ratio to GDP;
- X₁₇ - ICT usage in enterprises own website or home page to product catalogues or price lists;
- X₁₈ - units with research and development activity per 100 thousand population;
- X₁₉ - units with research and development activity per 100 thousand entities of the national economy;
- X₂₀ - average share of innovative in total number of entities in percent;
- X₂₁ - the share of new-registered creative sector entities in the total number of new- registered entities in percent.

Indicators represent different areas such as: protection of industrial property (X₉, X₁₀, X₁₁, X₁₂), researcher and development activity (X₂, X₃, X₁₄, X₁₅, X₁₆, X₁₈, X₁₉), higher education (X₄, X₅, X₆, X₇, X₈, X₁₃).

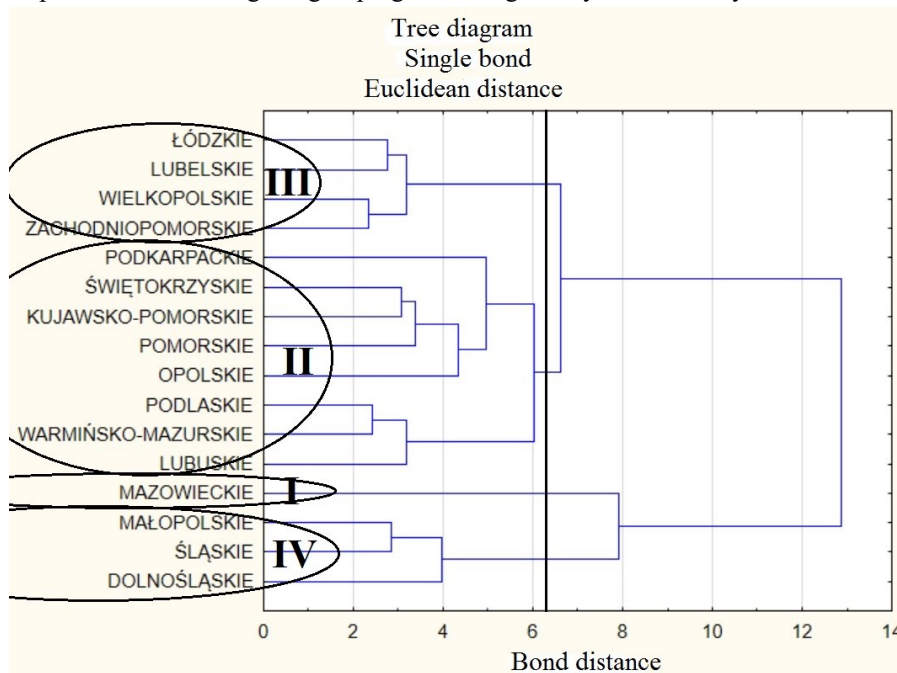
The test procedure consisted of the following steps (Carrillo, 2004):

- reduction of the set of variables using the Hellwig parametric method with Pearson's correlation coefficient matrix;
- grouping of voivodeships using Ward's hierarchical analysis;
- determining the characteristics of individual groups through the use of a deglomerating k-means analysis.

Calculations were performed using the STATISTICA12.0 computer package and a Microsoft Office Excel spreadsheet. Assumptions adopted by the study excluded from further analysis nine variables such as X₃, X₄, X₅, X₆, X₉, X₁₁, X₁₄, X₁₈ and X₁₉. In the end the study encompassed the twelve remaining parameters. Euclidean distance of 6.3 was used in Ward's hierarchical analysis (Olszewska, Gudarnowska, 2014).

3 Results and discussion

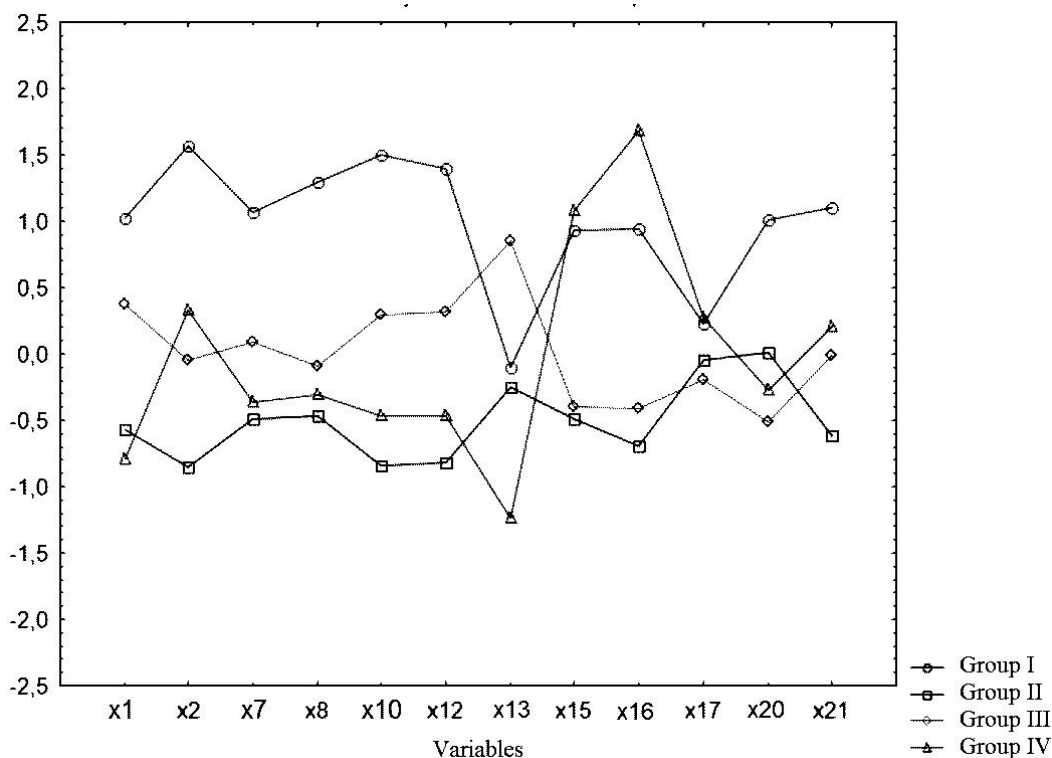
The result of the taxonomic analysis allowed the author's classification of Polish regions in terms of their innovativeness. Observed shared common features facilitated the allocation of Voivodeships into four separate classes. Figure 2 presents the dendrogram grouping Polish regions by Ward's analysis.



Source: Own calculation using STATISTICA12.0.

Figure 2. The dendrogram grouping Polish Voivodeships by Ward's analysis

The first group consists of only one object - the Mazowieckie Voivodeship. This region stands out by displaying the highest indicators of all objects being analyzed. The second class includes eight elements such as: the Podkarpackie Voivodeship, the Świętokrzyskie Voivodeship, the Kujawsko-Pomorskie Voivodeship, the Pomorskie Voivodeship, the Opolskie Voivodeship, the Podlaskie Voivodeship, the Warmińsko-Mazurskie Voivodeship and the Lubuskie Voivodeship. Objects of this group are characterized by having the lowest values of most indicators. The third category consists of four objects such as: the Łódzkie Voivodeship, the Lubelskie Voivodeship, the Wielkopolskie Voivodeship and the Zachodniopomorskie Voivodeship. These regions can boast of having the highest number of academic teachers but the lowest share of innovative enterprises. The last group includes three elements such as: the Małopolskie Voivodeship, the Śląskie Voivodeship and the Dolnośląskie Voivodeship. These voivodeships are characterized by having the highest share of intramural expenditures on R&D and the lowest number of academic teachers. Figure 3 shows the characteristics of individual groups through the use of a deglomerating k-means analysis.



Source: Own calculation using STATISTICA12.0.

Figure 3. The characteristics of groups by a deglomerating k-means analysis

On average Poland is covered by plans in 29.2 percent (Śleszyński et al., 2015). There are regions with coverage of local plans reaching over 55 percent such as: the Śląskie Voivodeship, the Dolnośląskie Voivodeship, the Lubelskie Voivodeship and the Małopolskie Voivodeship. This is the third group in the classification. Planning coverage below 10 percent is shown by, among others, voivodeships: the Podkarpackie Voivodeship, the Lubuskie Voivodeship and the Kujawsko-Pomorskie Voivodeship. This is characteristic of the second class of Voivodeships in the classification. Regions with identifiable smart specialization in order to properly innovative develop need spatial development plans.

Conclusions

The review of literature on the subject of spatial management shows that smart specialization is an important component of regional development. Smart specialization is a strategic approach to economic development through targeted support for research and innovation. The concept of smart specialization has good potential to become a target and at the same time an integral tool for the development of innovation policies and regional development strategies. Spatial development plans on the local and regional level should relate to smart specialization.

The applications of taxonomic methods as Ward's hierarchical analysis allowed the evaluation of Polish Voivodeships using 21 indicators. The author divided regions into four independent classes. The result was a classification of the analyzed Polish Voivodeships in terms of their level of innovativeness. The analysis presents a need to improve planning coverage in the second group, a step which will assuredly positively impact the innovation level of these regions. Regions with identifiable smart specialization in order to properly innovative develop need spatial development plans.

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THE ROLE OF PROCUREMENT IN CREATING VALUE

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Abstract

Purpose of the article The basic research question of this paper is to identify the trend of procurement's influence on the cost and value position of a company. We focus on this research topic because it is obviously not very meaningful for researchers and managers if we consider the concept of value chain. The research is about to explain how the role of procurement has changed during the last two decades, whereby we provide a scientific basis and reveal perspectives for further studies.

Methodology This scientific approach is twofold. First, we derive on the basis of statistical data the relevance of procurement for value creation. Second, the theoretical approach is providing a systematic overview on different steps of the evolution of procurement. The question of research is, whether there is a greater lever for value creation following the steps of evolution.

Scientific aim The scientific aim of this article is to emphasize the leverage effect of procurement considering value creation for a company by integration. We explain the vertical and introduce the horizontal dimension of integration.

Findings We observed changes in business operations on a large scale. Procurement is not any more just the ordering department. Procurement has changed into a value creator, by integrating the various internal activities and combining them uninterruptedly with the value creating activities of the suppliers. The value position is more driven by innovations coming from sourcing markets than by price reductions.

Conclusions Procurement has the highest impact on cost position of a product. In conclusion, a company's value is strongly correlated with procurement. Therefore we postulate to consider procurement not any more as a secondary activity, but as a primary activity within the value chain of a company.

Keywords: value, value chain, procurement, cost position, innovation, integration

JEL Classification: L14, M10

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Introduction

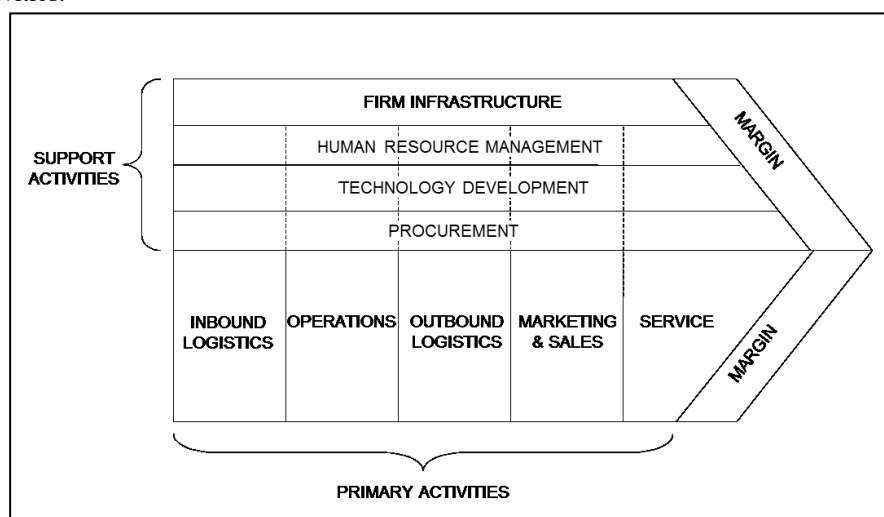
During the last couple of years the role of procurement has changed significantly. With regard to a large survey among more than 100 interviewed persons responsible for purchasing or general managers of medium-sized and large food manufacturers in Germany, this trend will continue: 57% stated, that the purchasing department will gain in significance over the next 10 years (Kerkhoff-Consulting, n.d.).

Undoubtedly procurement is already now of pivotal importance in the value chain of a company and contributes to value creation within the value chain of a company. This becomes clear, if we take a deeper look into a typical cost structure. The cost breakdown for the automotive industry shows exemplarily that the value of the sourced material reaches nearly 50% of the gross production value. Further on the share of trading goods (18.8%) is quite high. This manifests the close link between OEMs and their automotive suppliers, who have taken over complete production chains through the various outsourcing processes over the last couple of years (Mönning, 2014).

Products, their performance and particularly the price, which a company offers to its customers are mainly determined by procurement activities combined with the adequate level of successful vertical supplier integration.

1 Initial Situation

Even one of the most cited management approaches of the last century, Porter's value chain, considers procurement as a part of the value chain. In the well known value chain model (Figure 1) the value activities are split into primary activities and support activities.



Source: Porter, 2004

Figure 1 The Generic Value Chain

According to Porter, procurement -in the context of the value chain- is one of the so called supporting activities. Even though the purchased inputs are usually linked with primary activities, they are also part of any value creating activity including supporting activities and are spread within the entire chain of a company. To be considered as one of the primary activities, they have to be involved in the physical creation of the products, its sale and transfer to the buyer or in the products aftersales assistance and have to be clearly assigned (Porter, 2004).

If procurement is recognized in the classical sense of operational purchasing, so this definition will be justified. But the contemporary practice of integrating procurement right from the very early beginning into the development process suggests however, that through careful selection of (development) suppliers, production materials and manufacturing process also the procurement activity takes over a significant role to a product's concept and so to its physical creation and value generation.

Nevertheless Porter recognizes the value of procurement departments for companies. According to Porter the cost of procurement activities themselves are usually quite low or even negligible portion of total costs. But they often have a huge impact on the company's overall costs and its differentiation. So improved purchasing and procurement activities can strongly affect costs as well as the quality of purchased inputs. Furthermore they have

also a lasting effect on other activities, which continue to use the inputs and interact with the suppliers (Porter, 2004). This leads to the basic research question of this paper which is to identify the impact of procurement in creating value.

2 The impact of procurement

Market saturation, decrease in prices and margins as well as increasing competitive pressure enforce the turnaround away from classical purchasing towards a modern and strategic oriented procurement management (Hofbauer, 2013; Kerkhoff, 2008, p. 39) and will rise new scientific challenges.

Some enterprises already seem to recognize the leverage effect of procurement. In 2015 a survey of BAK Basel Economics and Deloitte among nearly 400 enterprises in the Swiss Mechanical and Electrical Engineering Industries underlines the great importance of procurement activities: 60% think, that optimizing and increasing the efficiency of the procurement chain will play a dominating role to enhance efficiency and achieve substantial cost reduction (Deloitte, & BAK Basel Economics, n.d.).

2.1 Targets of procurement

Procurement departments represent the interface between companies and sourcing markets. The targets of procurement are deducted from the relevant entrepreneurial objectives (Janker, 2004, p. 17-18, Koppelman, 2004, p. 112-115, Hofbauer 2013, p. 17-20).

As material costs have a direct impact on a firm's profitability, cost objectives have a high importance. To underline this statement, here is a meaningful example (Wildemann, 2008, p. 3): a decrease of material costs of only 3% causes the same impact on profit as an increase in sales of 60% (assumptions: calculatory expected return 3%, share of costs of materials 60%). But to avoid the danger of incompatibility and mutually negative influences, cost targets have to be considered in total with all other objectives of a company.

The quality of bought-in parts is another important objective for procurement. To ensure continuous production, reliable supply with raw-material and other bought-in parts, modules and systems is indispensable. Last but not least the increasing flexibility is a procurement objective as well (Janker, 2004, p. 18, Koppelman, 2004, p. 117).

2.2 Evolution from purchasing to procurement

The evolution from purchasing to procurement forms the scientific basis for this paper. In former times the operational buying execution was recognized as an assisting activity for other managerial functions within the value chain of a company. Since the end of the 1980s, when the competitive potential of procurement has been detected, the content and meaning of procurement is subject to constant change (Lingohr and Kruschel, 2011, p. 87).

This change is particularly due to the ongoing and increasing concentration on core competencies of the OEMs and as a consequence thereof the reduction of steps in the production process as well as on different research and development levels. Instead of producing all the necessary parts and components by their own, they were more and more sourced from subcontractors, which can produce those parts and modules often more economically.

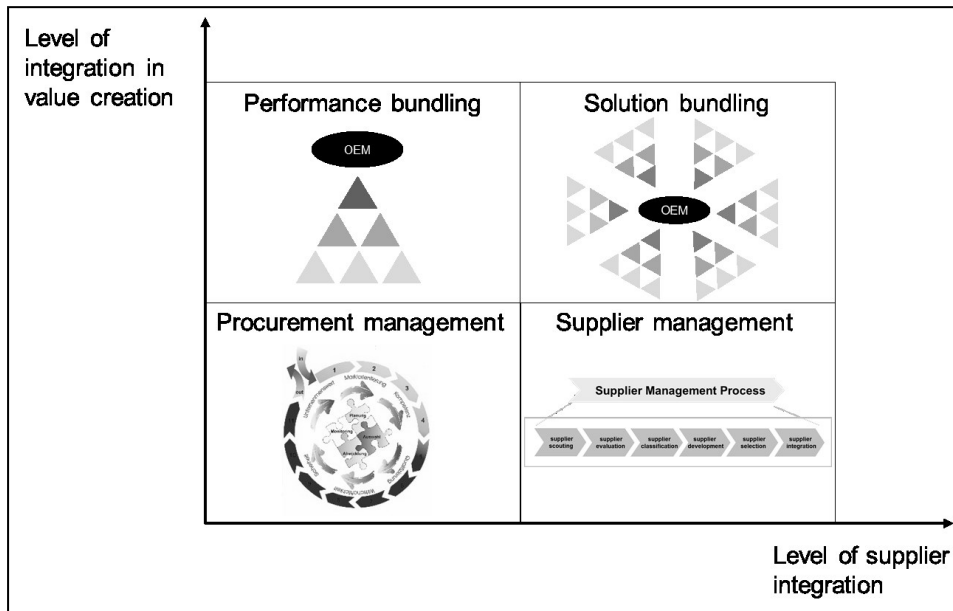
The subject matters of procurement along the time line. At the very beginning the purchasing department had to buy parts at the lowest price. The main task was cost optimization. The next step was the introduction of a structured process within the company in order to execute the buying process in the most efficient way. After this process optimization the procurement focused on the suppliers. The scope was to combine the value chains of the suppliers with the own supply chain of the company. The scope was to improve the performance of suppliers and to avoid discontinuities in the supply chains. The latest step was the integration management. Here we distinguish between vertical and horizontal integration

3. The new understanding of procurement – vertical integration

The role of procurement will exceed the pure supplier management and proceed further on towards the management of a network. With an increasing level of integration in value creation, tier structures (performance bundling) and outsourcing (solution bundling) will gain importance. As a consequence the selection of suppliers to be integrated will become a key success factor. Figure 2 shows this direction of evolution.

The initial position of contemporary procurement is a well structured procurement management process (Hofbauer 2013). In the next steps, the suppliers are involved more and more to improve the performance. After having improved the capabilities of the suppliers, some of them are able and willing to take more responsibility.

They are called tier-1 suppliers and they have a higher level of integration and value creation. Here we talk about performance bundling. In this case all steps of the processing depth and of total added value of a specific system or module are covered by one single supplier. In the case of solution bundling, all the different parts, components, modules and/or systems are delivered by different tier-1 suppliers. The OEM (Original Equipment Manufacturer) has outsourced all upstream activities (research and development, logistics, manufacturing, testing), but the downstream activities (sales and marketing) are done under the own brand.



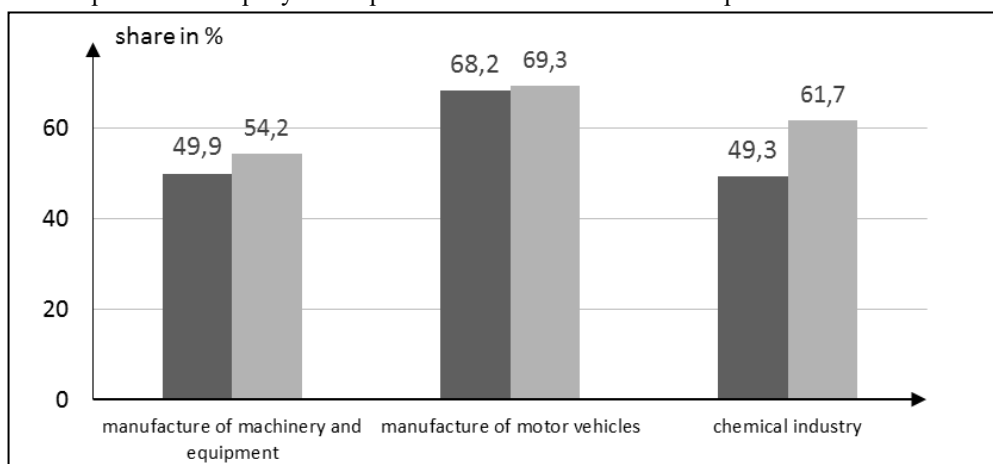
Source: own graph

Figure 2 Evolution of procurement towards network management

3.1 Increasing sourcing volume

The enhanced importance of procurement for creating value can be illustrated by a numerical example of the volume. According to the German Federal Statistical Office (Statistics Bundesamt, 2015) the share of material costs in the chemical and engineering industry were above 50% and for the automotive industry even exceeded two thirds of all costs.

Figure 3 shows the evolution of sourced material cost within ten years (dark bar: 2003; light bar: 2013). So the major lever to optimize a company's cost position over all industries is the position of material costs.



Source: own graph, based on data from German Federal Statistical Office, 2015 and 2006

Figure 3 material cost in the manufacturing sector 2003 and 2013 (proportion to gross production value)

In addition to the management of rising volume there are more tasks arising for procurement management. These tasks are described in the next chapters.

3.2 Corresponding Procurement Tasks

Regarding its function in a company, procurement can be split into an operational part and a strategic one (Dölle, 2013, p. 4, Hofbauer et al., 2012, p. 9, Bundesverband Materialwirtschaft, 2008, p. 116). In this context strategic procurement provides the framework for the operational business and determines the direction. Topmost objective is to ensure reliability of supply (Hofbauer et. al., 2012, p. 10). The following tasks can be attributed to this objective (Müssigmann, 2007, p. 11)

- development and implementation of sourcing strategies
- supplier relationship management
- strategic and operational requirement and procurement program analyses
- make or buy decisions
- total cost optimization
- thinking and acting in continuous processes

Operational procurement serves the implementation of the strategic guidelines and deals mainly with the following issues (Large, 2009, p. 220):

- clarification and specification of needs
- inquiries, operational selection of suppliers, orders, material call-offs
- monitoring of timing, quantities and quality
- goods receipt, storage and internal audit
- disposition, material planning and forecasting
- purchasing data administration and much more

3.2.1 Advanced Procurement

In terms of advanced procurement the most important issue is to detect and utilize innovations and innovative potential for the company. Therefore an extensive market research is necessary. Once suppliers are identified, they should be closely involved into the OEM's pre serial and serial development process. Further on products will only be designed best for subsequent manufacturing at supplier's site, if their manufacturing know-how is considered prematurely during the product development process. Far too often products were designed and physically developed before the production feasibility is checked, which is necessarily the next step (Hecht, 2014, p. 5).

According to Kerkhoff, companies, which do not seize the opportunity of early material and supplier decisions, will suffer from strategic disadvantages (Kerkhoff, 2008, p. 56). Companies need to change their thinking, they have to get off from reactive procurement execution towards proactive procurement management. In doing this, the main task is to secure a close alignment with the sourcing market. There is a very early possibility to set the course in doing the right decisions for the parts, modules and systems for a perfect fit of the subsequent production process. Differences and variations to the original technical specifications or vague requirements can result quite fast in uncontrollable higher expenses. Such inaccurate conditions will directly influence the return of the product and accordingly will have an impact on the value chain. Value of the company will be destroyed. The task of the procurement department is to assure a stringent supplier management on the one hand and to ascertain an internal regulating factor on the other hand.

In order to support value creation in terms of the return of the products, the procurement management has to look for innovations and solutions to reduce complexity and optimize the product for the whole value chain.

3.2.2 Cost Engineering

Cost engineering is one key method to analyze processes, find further value improvements and run the product development and production management process efficiently. Purchasing prices should not be negotiated without being analyzed bottom up with all effecting factors. Cost engineering aims to create transparency, to open up different options and to find a balance between function, performance and costs as well as prices. However it requires a great deal of experience and technical expertise to calculate the overall cost of a product, which is not yet existing. Only technical drawings and facts out of specification sheets are available.

The main task of the procurement management is, to find the best supplier with an optimized cost position in order to create more value (Hecht, 2014, p. 33). Subsequent changes will have a negative impact on the cost position. There are different approaches, each one requires profound manufacturing know-how:

- industrial engineering, work structuring, methods of time measurement

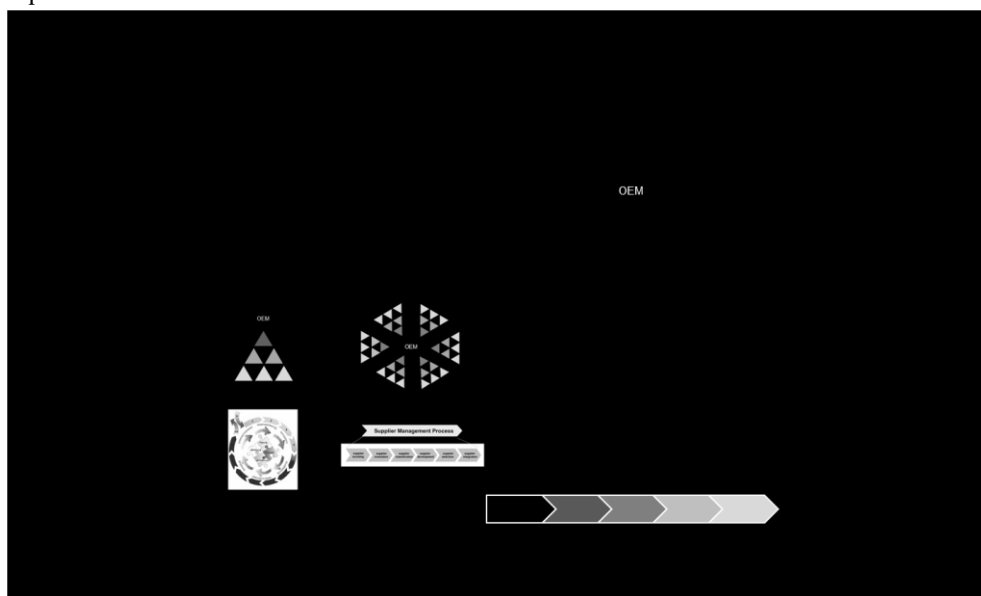
- virtual factory, production organization, process optimization
- transferring experiences from predecessor products
- physical-technical correlations

4 Challenges of the future- horizontal integration

New challenges for the procurement management are coming along with new business models. These business models combine products and services in the horizontal dimension as service providers. A car manufacturer for example does not only sell just cars anymore, but provides mobility services. These mobility services shall support the core business in selling and providing cars. To gain a competitive advantage, these mobility services include information about navigation, guidance, traffic warning, parking, hotels, restaurants, points of interest and even booking and payment services.

All these changes provide new possibilities for creating value, combining different contributions to a complete benefit bundle on the highest value-added step. A complete new dimension is provided in the space between a higher “level of supplier/partner integration” on the x-axis and the “level of integration in value creation” on the y-axis. Suppliers become more and more partners in providing a specific bundle of benefit. For this reason the role and meaning of the procurement management is changing again. All the different contributions of that bundle have to be identified, specified, analyzed and procured from the providers of the sourcing market. The principal methods of procurement have to be applied to objects and services on a higher level of integration.

Figure 4 illustrates the aspired space of new business opportunities at a higher level of integration. There will be higher potential of business and a higher extent of differentiation towards the customers, but also higher investment required.



Source: own graph

Figure 4 evolution towards horizontal integration

Conclusion

Excellent companies have realized that procurement is more than just buying at the best price. Procurement activities have to be applied in the very early stage of development. Only in this early stage innovations can be put into practice and design-to-cost and value-to-cost considerations can be taken into account in order to create and raise value across the whole value chain. So it is necessary to analyze and use the potential of the sourcing markets as early as possible. Further on it is essential to select and use high-performance suppliers to gain competitive advantage.

As we have presented, procurement executed in a professional way, is a key value lever in the value chain of a company. With this comprehensive approach, including operational as well as strategic dimensions, companies are well prepared to do the right things in the right way. The basic framework is the procurement management process as well as the supplier management process. But this is not enough, as we have deployed in Figure 2, the

vertical integration with a higher level of integration in value creation provides higher business opportunities with performance bundling and solution bundling.

In chapter 4, we introduced a new sphere of activity for procurement, presenting the horizontal integration. This new dimension will need to be considered in further studies discussing how it can provide new business opportunities and also imply new challenges. In conclusion, suppliers will get more and more involved as partners in order to provide complete bundles of benefit for the customers. Specific bundling capabilities are required to exercise this new scale of operations at a higher level of integration.

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*PERSONAL TRAINER IN THE FITNESS INDUSTRY IN POLAND.
EXEMPLIFICATION OF BUSINESS MODEL COMPONENTS AND
EXPLORATION OF DOMAINS OF INNOVATIVENESS: RESULTS OF
PRELIMINARY STUDIES*

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Abstract

Purpose of the article Recognizing of activity of personal trainers within the fitness industry conducting registered business activity in Poland in terms of the shape of the used business model and conditionings of innovation introduction.

Methodology/methods Qualitative analysis of the source material gathered with the use of a structured questionnaire. The task was completed with the use of the programme QSR NVivo 10. With regard to the character of surveyed subjects nonrepresentative sampling in the form of a snowball method was used.

Scientific aim Description of ontological components of the business model of personal trainers and the revelation of the existence of the relationships between them and the innovativeness issues of the business in the fitness sector.

Findings Fragmentary descriptions of the conditions of running business in the fitness sector existing in the literature are reflected in explanation of the ontological components of business models in the cases examined. Whereas in the opinion of the respondents the key relationships exist between such ontological components of business model as: customer value, target group of customers, forms of service and the following issues of innovativeness: current form of the offer, forms of the conducted marketing activity, process of offer improvement, value of profit margin.

Conclusions The results of the study indicate that even among homogeneous group of personal trainers there might be differences in the declared description of ontological components of business model. These differences can be seen as the result of innovations. Innovations, however, are conditioned by the terms of Polish fitness sector, by the price sensitivity of Polish customers in particular.

Keywords: business, model, fitness, trainer, innovativeness

JEL Classification: M1, M10

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Introduction

The issues presented by publications of scientific nature within the scope of economics and management describing the fitness sector are often related to the problem of level of services rendered (to be precise, the necessity to ensure their high level (Lloyd, 2005)) both in terms of quality of the activities themselves realised to the benefit of a client, and competences of persons rendering those services in a broad sense (Al-alak, 2010). The results of the conducted studies suggest that quality in the fitness industry is connected with such dimensions as "pleasure", "mental change", "physical change", whereas rendering fitness services itself is based on the dimensions of the so called relation and technical competences (Lagrosen, Lagrosen, 2007). The issue of quality of services rendered in the fitness industry is also a subject of elaborations within the scope of methods of its measurement (Chang, Chelladurai, 2003). There are also issues of social relations and marketing raised as a foundation for ensuring the quality of services and durability of relations between an entity rendering services on the fitness market and its clients (Al-alak, 2010). The differences recognized in this context within the expectations of particular groups of customers of fitness clubs towards the attitudes and competences of clubs' employees (Soita, 2012), as well as towards prices of such services (Afthinos, Theodorakis, Nassis, 2005). Another issue arises concerning the scope of state regulations related to this industry, especially within the scope of professional qualifications of fitness instructors (Viallon, Camy, Collins, 2003).

Considering the previously quoted remarks it can be said that it becomes an important challenge to take a comprehensive and coherent description of business activity in the fitness sector. For this purpose the concept of the ontology of the business model can be used. This intention will be performed based on the description of cases of personal trainers based on a registered business activity, who are not included in typical business reports on the fitness sector in Poland (they relate to fitness clubs). This will allow to gain a unique insight into the businesses run by personal trainers in the fitness service industry, which together with e-commerce is one of the most dynamically developing branches on the Polish market (Polski rynek fitness jednym z najszybciej rosnących w Europie, 2015).

1 Method

The conducted studies were based on two main research questions. Firstly, on how the assumed ontological components of a business model of a personal trainer in the fitness industry should be described. Secondly, which domain of innovativeness within the modus operandi of a personal trainer could be pointed out.

The structure and content of questions concerning the first question were introduced by an insightful analysis of publications on business model ontologies. The internal analysis of the assumptions of the Business Model Ontology (BMO) concept (Osterwalder, 2004) and e³-value business model ontology (Gordijn, Osterwalder, Pigneur, 2005) was conducted. Then, as a result of the external analysis consisting in mutual comparison of these ontologies, the gist of the relationship between particular ontological components of these business models and their relatively complete meaning were researched.

The second research question was, in turn, formulated as three specific research questions. The first one concerned what the sources of innovative activity resulting from personal relationships of a personal trainer are. The second question regarded personal trainer's way of thinking about implementing innovation in their activity. The third question, in turn, concerned the opinion about mutual strength of a relationship between particular ontological components of a business model and selected issues concerning implementation of innovation.

The first question was to recognize the opinions of trainers on whether contacts with both customers and other entities in the fitness industry let them notice possibilities of improving their offer. The second question was based on the necessity to recognize the opinions of trainers about their way of thinking about implementation of innovation. In order to formulate an appropriate question the presentation of two concepts of the order of tasks undertaken within this scope: proposal for a customer - costs/revenues - essential activities - essential resources and proposal for a customer - essential resources - essential activities - costs/revenues (Eyring, Johnson, Nair, 2011). The third question required from respondents determining the mutual strength of the relationship between particular ontological components of a business model and particular groups of activities connected with implementation of innovations being an elaboration of the concept of the order of tasks undertaken within this scope. The elaboration was also as a result of a comparative analysis with the literature on the subject (Taran, Nielsen, Thomsen, Montemari, Paolone, 2015).

The arrangements made resulted in a final structure of a questionnaire and making it available to respondents. The respondents were persons rendering services in the fitness industry as personal trainers based on a registered business activity. These were persons running their own businesses in the Silesian Voivodeship, Poland. 14 persons altogether were asked to fill out the questionnaire. The selection of respondents reflected the choice

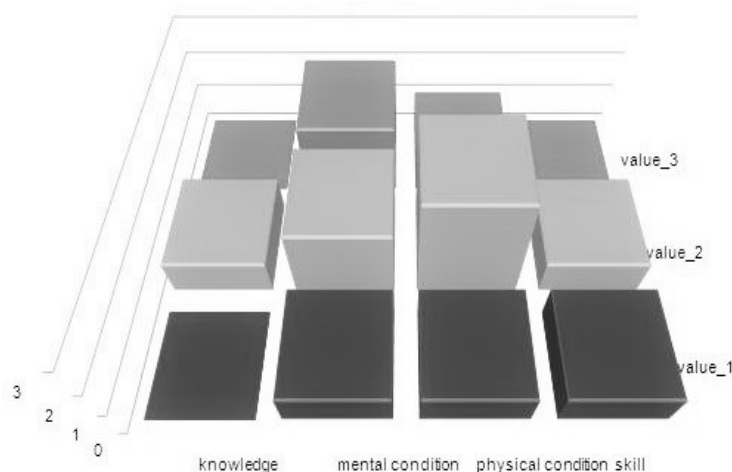
basen on snowball principles. In the end, the number of filled out questionnaires that could serve as a basis for conducting the analysis amounted to 3. The number might not be impressive, however, due to the homogeneity of the group of respondents with regard to the organizational and legal frame of the conducted business activity, i.e. a registered business activity, as well as the objects of the company's activity, i.e. trainings based on martial arts, as well as a type of a client (i.e. individual persons), it was possible to begin the realisation of the qualitative analysis procedure (which is justified as a result of posing of research questions) and make generalisations within the scope of the described cases (Lisiecka, Kostka-Bochenek, 2009).

2 Results

2.1 Ontological components of a business model

2.1.1 Customer value

The results of the conducted analysis point out that while defining the essence of the offer aimed at customers, respondents most often used the word "skill", which was used twice and constituted 6.45% of the general number of words used by all the respondents. It is worth emphasizing that the inflected forms of the words "skill" and "fitness" were used twice each (a single inflected form of these words therefore constituted 3.23% of the general number of the words used).



Key:

Codes used: physical conditio, mental conditio, skill, knowledge

Source documents regarding the opinion of respondents: value 1, value _2, value_3

Source: own work

Figure 1 The structure of statement coding concerning benefits for clients of the services offered

Particular answers of the respondents within this scope concerned the following issues (presentation in the form which is the subject of the analysis of the frequency of the usage of words; translated into English):

- Respondent 1: better physical condition, hand-to-hand fighting skills, shaping of one's character.
- Respondent 2: well-being; improvement of physical condition; knowledge about healthy lifestyle; ability to do physical exercises.
- Respondent 3: weight reduction; discharging negative emotions; increased self-confidence.

With regard to such respondents' presentation of benefits of the services offered the decision has been made to recognize the structure and convergence of the statements. Coding of these statements was used for this purpose. Four codes were used in this process: knowledge, skill, mental condition, physical condition. Figure 1 presents the structure of statement coding.

It is worth noticing that respondents together made references to aspects connected with physical and mental condition. Two of them (respondent 1 and 2) also mentioned issues regarding practical skills to do certain physical activities. Whereas respondent 2 also gave a general answer on the issue regarding knowledge about principles of healthy lifestyle which resulted in the use of the code "knowledge", but it was also treated as a set of problems regarding body and psyche, therefore the codes "mental condition" and "physical condition" were

assigned simultaneously. Thus, there is an increased number of codes assigned to the statements of this respondent.

2.1.2 Form of service and target group of customers

The respondents were also asked to give the scope and forms of the services rendered. These indications are shown in table 1.

Table 1 The scope and form of services rendered

Scope/form of service	Respondent 1	Respondent 2	Respondent 3
trainings	martial arts	martial arts, body building	martial arts
current control of realisation of training plans and progress		body building	body building
additional counselling within the scope of physical activity	martial arts	body building	body building
counselling within the scope of nutrition		martial arts, body building	
sale of products (e.g. sports equipment, sportswear, dietary supplements etc.)			
psychological support/ personal development		martial arts, body building	martial arts, body building
other			

Source: own work

It is worth noticing that respondent 2 who pointed out the greatest subject scope of the service rendered is at the same time the respondent whom the largest number of codes in the analysis of benefits offered to the client was assigned to. It should also be reminded that respondent 1 who gave, as it seems, the most precise/narrowed statement regarding the benefits of the service rendered for the customer showed at the same time the narrowest scope of forms of this service.

In case of two respondents additional forms of services were assigned to the subject of service, namely body building. It is, above all, related to the nature of this service which requires continuous engagement of the customer (not only under the supervision of the trainer during classes; it is related to healthy lifestyle) and potential control and distant substantive support for the customer (e.g. via mobile/electronic means of communication). The table shows also that in case of respondent no 3 body building service may be treated as an additional one against martial arts (lack of body building as the subject of service for the form "trainings").

There is the convergence of opinions between respondents when it comes to the basic type of a customer. According to them, it is an individual customer. In all cases martial arts classes were also pointed out as a subject of fitness service. In two cases there are also persons interested in body building as prospective clients. In two cases it was also unequivocally determined that the group of target customers are persons who professionally train neither martial arts nor body building. In one case (respondent no 1) did not establish this issue (i.e. whether customers are amateurs or professionals).

2.1.3 Competences/resources and sources of costs and revenues

In case of key competences essential for conducting activity as a personal trainer, respondents in their declarations pointed at competences resulting, above all, from competitive experience and/or collaboration with professional fighters. In two cases (in case of respondent no 2 stated clearly in the declaration, and in case of respondent no 3 stated in an implicit way) improvement of qualification by means of participating in trainings/courses should be pointed out as well. Whereas, among other competences pointed out by respondents are, above all, competences related to interpersonal relationships.

In case of the main ways of creating and maintaining customer relationships respondents 1 and 3 pointed at the use of electronic social networkings for conducting promotional activities. Respondent 2 pointed at a rather traditional and even surprising form of marketing activities, as far as this subject of conducted business activity is concerned, namely telemarketing. However, all declared that they use Facebook as the main or additional way of promotion. Respondents 1 and 3 admitted that they use their own website. According to all the respondents, the main advantage of using electronic ways of promotion is the possibility to reach a large circle of prospective customers.

All three respondents use also a particular rate strategy (price policy), however, in each case it takes a different form depending on the context of winning and keeping customers. Respondent 1 uses a standard price for the service, respondent 2 points out the use of price discounts, whereas respondent 3 - the use of discounts in case of long-term collaboration with a customer.

The place rented for the purposes of rendering the service was said to be the main resource gained by respondents. This indication finds its confirmation in the declared structure of the costs of services rendered. While analysing the statements of respondents, it may be assumed that among the costs of services the dominating are: costs of renting the gym (15%-20%) as well as costs of petrol necessary for reaching the customer/the place of rendering the service (from 10% to 30%). All the respondents state also that the profit margin gained, which is understood as revenues minus direct costs from the services rendered in a standard way is at least quite satisfactory.

2.2 Domains of innovativeness

Respondents agreeably pointed out a particular way of thinking about the introduction of changes in the offer for the customer. It is a sequence offer for the customer - costs/revenues - indispensable actions - indispensable resources.

Respondents agreeably regard customers as a source of information which may be used for modification of the offer for both existing groups of recipients of the service as well as for creating a new offer for new customers. In case of finding other trainers as such a source (those running their own business activity in the fitness service sector), two respondents (1 and 3) perceive them in such way, whereas respondent 2 could not take his position on this issue.

The intention of answering the third research question within the area of domains of innovativeness require from respondents the assessment of a relationship between particular ontological components for introducing innovation within the conducted business activity and then making the same assessment in the opposite direction, that is assessing the influence of innovation on ontological components. The assumed ontological components were as follows (Gordijn, Osterwalder, Pigneur, 2005): value offered to the customer, form of service, target group of customers, gained and used competences/resources and costs/revenues. The following issues were assumed as the expression of the problem of the implementation of innovation (Eyring, Johnson, Nair, 2011): rate strategy used, current form of the offer, value of profit margin, process of improving of the offer, form of the conducted marketing activity, brand, collaboration with other entities.

Respondents were asked to assess the strength of the mutual influence of elements from both groups (ontological components and innovativeness issues) based on a five-step assessment scale. The results of these evaluations were then classified into the following groups: weak relationship, moderate relationship, strong relationship. Further analysis needed the selection of the areas for which all the indications of three respondents were at least at a moderate level of mutual relationship. In this way, the choice of respondents' indications characterized by the relative reliability and indicating a relatively significant relationship between selected factors was made.

In the respondents' opinion the strongest mutual influences exist between the ontological component "customer value" and innovativeness issue, which is "the current form of the offer"; the ontological component "target group of customers" and innovativeness issue "conducted forms of marketing activity"; the ontological component "target group of customers" and innovativeness issue "conducted forms of marketing activity". In these three cases, the assessment of the mutual influence means the double indication of the "strong" and one "moderate".

Other relationships of mutual influence between the elements of these two groups that meet the selection criteria are for the four interactions, where the respondents' indications of their strength were twice "medium" and once "strong". These relationships are defined between the ontological component "forms of service" and the three issues of innovativeness: "value of profit margin", "current form of the offer" and "process of offer improvement". The fourth one relates to the ontological component "the target group of customers" and the issue of innovativeness "process of offer improvement". It is worth saying that there were no indications of respondents who agreed in all three cases, i.e. an undistinguished relationship with a three-time indication of "strong" and three-time indication of "weak".

3 Findings

The analysis of contents of the service offer and benefits supplied to customers seem to confirm the basic arrangements presented so far in the literature on the subject. The important aspects of these services in case of the studied respondents are issues concerning physical and mental condition. Professional competences, such as

formulate research problems for further research intents conducted on a larger scale. Another stage of studies concerning Polish fitness service industry as exemplified by personal trainers should, as it seems, focus on statistical confirmation of the interaction between the ontological components of the business model and innovativeness issues presented in Figure 2.

Another issue which should be discussed in further research intents is the one regarding implementation of the newest solutions within the scope of mobile technology in rendering services on the fitness market (Deloitte, 2015). It is worth highlighting that apart from their use in an obvious way in prospective promotion/marketing activity, the attempt should also be made to describe their use in the realisation of the service itself rendered by a personal trainer, and its influence on redefining the offer for customer and understanding of customer value behind the service rendered.

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*TECHNOLOGY TRANSFER CENTERS AS AN INSTRUMENT FOR THE
DEVELOPMENT OF TECHNOLOGICAL CAPABILITIES*

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Abstract

Purpose of the article is to show how technology transfer centers (TTCs) can affect the development of technological capabilities as a result of cooperation between the science and business sectors on the example of Polish experiences in this field.

Scientific aims The first scientific aim was to present the role of TTCs in the development of technological capabilities. The second scientific aim was to discuss the research results on the functioning of these institutions in Poland.

Methodology The research method that was applied in the case of the first scientific aim was a theoretical analysis of the scientific works and reports in the field of technological capabilities and cooperation between the science and business sectors. In order to achieve the second scientific aim empirical research was conducted from the perspective of 820 representatives of academic staff.

Findings The research study reveals that the analyzed TTCs of Poland have an immense potential to provide an effective support for the development of technological capacity of the companies operating in the local area. This potential is not fully utilized due to an insufficient activity of the TTCs in terms of both establishing and maintaining cooperation with business in the area of implementing a technological change as well as technology commercialization (not sufficient managerial and marketing capabilities). It reflects the weakness of the whole system of technology transfer in Poland and results the lower level of technological capabilities of both sectors.

Conclusions The authors emphasize the need for a more effective support for the companies in their innovation activities by the TTCs in Poland, which could result in strengthening technological capabilities in science and business sectors. However, this means intensifying the activities that promote cooperation between science and business as well as indicating how both sides could benefit through their participation in TTCs.

Keywords: technological capabilities, technological environment, technology transfer, technology transfer centers, R&D sector, science-business cooperation

JEL Classification: L3, L31, M13, O3, O31, O32, O34

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Introduction

A technology transfer center (TTC), as an element of the technological environment, is an instrument of innovation policy which enhances industrial competitiveness. TTCs may contribute to the development of enterprises' technological capabilities and thus lead to the acceleration of technological progress. TTCs are a source of the external effects of knowledge flows, where knowledge created by a given entity generates a positive impact on the activities of other market participants. It results from the fact that such centers support the development of scientific and industrial partnerships in carrying out R&D activities and the implementation of their results by companies. Knowledge absorption from the science sector to the industry sector taking place in TTCs is intended to result in more technologically intensive products, and thus a higher added value. Therefore, TTCs, if operating properly, contribute to the modernization and development of the industrial structure, in which the share of technologically intensive products is growing in a manner characteristic for the knowledge economies. The knowledge economy should have an efficient system of knowledge creation, development and dissemination, which includes also various types of facilities (like TTCs) supporting the flow of technology from the academic environment to the business sector.

The main purpose of the paper is to present how technology transfer centers can affect the development of technological capabilities as a result of cooperation between the science and business sectors on the example of Polish experiences in this field. In order to realize the main purpose of the paper, two scientific aims were defined. The first scientific aim was to present the role of TTCs in the development of technological capabilities based on the analysis of the subject literature. The second aim was to discuss the research results on the functioning of these institutions in Poland. The empirical research was conducted from the perspective of academic staff. The model presented in Figure 1 shows possible directions of the impact of TTCs on technological capabilities of science and business sectors, which were identified by authors. The model was created through the realization of the first scientific aim and analysis of obtained empirical findings.

With regard to the above, the article is divided into three sections. The first section summarizes the ways of understanding technological capabilities and presents technology transfer centers as a part of the technological environment. The second section presents a brief review of the existing literature to propose a possible impact of TTCs on the development of technological capabilities. The third section discusses the results of the empirical study on the surveyed staff of selected Polish universities on the functioning of academic TTCs and presents the possible directions of the impact of TTCs on technological capabilities of science and business sectors.

1 The narrow and broad understanding of technological capabilities

Technological capabilities are usually understood as capacity in terms of processes associated with knowledge locating, acquisition, development and use. Technological capabilities are reflected in operational strategies, products and services, and the quality of human capital, especially in its knowledge and learning skills. In fact, technological capabilities are formed primarily during the learning and knowledge absorption processes. They allow for a reconfiguration and a renewal of resources and competences to adapt them to a rapidly changing environment (Majewska, 2013). For example, L. Kim (1997) defines technological capabilities as the ability to use technical knowledge effectively in order to assimilate, adapt and change the existing technologies (p. 4). Since it requires appropriate skills of human capital, the researchers of technological capabilities perceive human capital as the main factor that determines the development of technological capabilities, being simultaneously their component.

In a narrower perspective, technological capabilities are mainly identified with a capacity to generate new knowledge and the use of the knowledge already developed to implement a technological change. Technological capabilities in this approach serve the development of knowledge. They are useful in designing various types of new technologies. They also lead to understanding why (know-why) and how (know-how) a given task should be performed, for example modernizing a processes or improving a product. They are thus mainly the capabilities that concern a broadly defined innovation activity. Therefore, for many authors technological capabilities at the company level are various types of knowledge, skills and competences that are necessary to acquire and adapt knowledge in order to improve manufactured products, to develop and introduce new products and processes, and to satisfy consumers' needs at a larger scale.

In a broader perspective, the technological capabilities also cover various types of capacities and abilities connected with shaping better conditions for a technological progress. Consequently, technological capabilities are also equated with the technological environment. In this case they refer to the strategic capacity of individuals, organizations or countries, which gives an opportunity to transform resources into assets as well as absorb knowledge from different channels of its transfer (Archibugi & Coco, 2004; Coombs & Bierly III, 2006;

Filippetti & Peyrache, 2011; Morrison, Pietrobelli, & Rabellotti, 2008; Sears & Hoetker, 2014; Zaidi & Othman, 2011).

With regard to the analysis above, the technological environment is a surrounding for the development of technological capabilities that are understood in the narrower perspective. The technological environment primarily includes various types of soft infrastructure, namely the knowledge needed to achieve the objectives and tasks. The technological environment also includes hard infrastructure, *i.e.* the technical infrastructure (e.g. information and communication infrastructure) and tangible factors of production which result from knowledge and technology used in a country such as machines, devices and laboratory equipment. Finally, it can be concluded that the technological dimension of a company and its environment include knowledge, technical equipment and infrastructure. They collectively allow for transforming resources into goods or services through activities of human capital owned by a company and accessible in its internal and external environment (Bielski, 2004; Edvinsson & Malone, 2001; Hatch, 2002; Majewska-Bator, 2009).

Accordingly, the technological capabilities indicators, which are in most cases the indirect measures of quality phenomena, can also be divided into two groups. The first group of indicators refers to the narrow understanding of technological capabilities as they are applied to measure the level of technological capabilities already achieved by a country (e.g. the level of production process sophistication, the number of patent applications, the absorption scale of new technologies in the business sector, the expenditures on R&D). The second group of indicators comprises the activities in the private and public sectors that are aimed at improving the level of technological capabilities (e.g. different types of cooperation among universities and business in R&D, services provided by the government in order to improve business performance, public procurement to support technological innovation) (Archibugi & Coco, 2005; Blomkvist, Kappen & Zander, 2015; Filippetti & Peyrache, 2011; Majewska, 2013; Zaidi & Othman, 2011).

The study of technological capabilities in the field of knowledge diffusion is closely associated with measurement of knowledge absorptive capacity since accumulation of technological capabilities, particularly in developing countries, takes place in the learning process. The learning process requires the development of absorption capacity (Coe, Helman, & Hoffmaister, 1997; Sobanke, Adegbite, Lori, & Egbetokun, 2014). Once again, abilities in the area of learning are particularly important because they determine both the speed and effects of new knowledge assimilation and its adaptation into undertaken activities (Majewska-Bator & Jantón-Drozdowska, 2007). Hence the differences in technological capabilities also arise from the level of knowledge absorption capacity. It is due to the fact that the development of absorption capacity is essential for the processes of external knowledge identification, acquisition and assimilation with the internal knowledge owned by the entity (Majewska-Bator, 2010). Therefore, knowledge absorption capacity is interpreted as one's own potential for efficient knowledge acquisition from various external and internal sources and the ability to learn and solve problems. Upgrading knowledge absorptive capacity is thus useful in creating technological capabilities by means of the increase of knowledge diffusion via its different diffusion channels. For example by the activities of the technology transfer centers described in this paper (Cohen & Levinthal, 1990; Daghfous, 2004; Lall, 1992; Zahra & George, 2002).

2 The possible impact of technology transfer centers on the development of technological capabilities

Companies can receive knowledge from their technological environment *inter alia* by specialized staff such as scientists or specialists in a particular field, purchased equipment, software, consulting services as well as the results of R&D reflected in patents and methodology (Hatch, 2002). In consequence, by means of various channels of information transfer the technological environment can be a source of knowledge for companies. In that way the technological environment contributing to the diffusion of technological progress when particular knowledge is implemented and reflected by a technical change (Majewska-Bator, 2009). What proves to be a good example of a technological environment that supports the development of technological capabilities is the National Innovation System (NIS). The NIS is a set of diverse institutional arrangements that constitute inspiring conditions for knowledge acquisition, development and diffusion. It operates as a network of interconnected institutions of the public and private sectors whose tasks stimulate knowledge absorption and enhance activities aimed at implementing technological changes, also by providing a financial support and a technical assistance (Freeman, Lundvall, 1988; Lundvall, 1992; Nelson, 1993; Edquist, 1997; Dosi et al., 1998).

The NIS includes, among others, clusters, technology parks, business incubators and technology transfer centers. As a group of institutional arrangements, it forms an infrastructure that facilitates knowledge sharing and a diffusion of technological progress as a result of fostering the cooperation on innovation activities among companies and between companies and scientific research institutions. The mutual relations, exchange of experience, discussions on problems and joint ventures to overcome difficulties taking place in the process of

conducting innovation activities. These all can improve social capital, making the cooperation more effective, as well as develop knowledge more focused on the needs of industry (Klamut, 2000; Nelson & Romer, 1996).

In the framework of the NIS, individual elements of a company's technological environment, for example institutions providing information about new technologies, research centers aimed at carrying out research implementation and R&D subsidies, can spread knowledge among companies and help in its absorption into business activities. Such actions increase the scale of technological progress and lower the costs of innovation activities, which is particularly important for small and medium-sized companies. Additionally, a cooperation between industry and universities can help to solve such problems of small and medium-sized enterprises as a lack of sufficient financial resources to carry out R&D activities, a limited access to modern technology, a lack of specialized human resources or technical infrastructure (Freeman & Lundvall, 1988; Lundvall, 1992; Nelson, 1993; Edquist, 1997; Dosi, Freeman, Nelson, Silverberg, & Soete, 1998; Xu, 2013).

Undoubtedly, TTCs belong to the institutional arrangements that serve to increase the effectiveness of knowledge transfers. They can be defined as diversified organizational, non-profit, advisory, training and information units which implement and realize support programs for transfer and commercialization of technology. Operating at the interface between science and business, the activities of TTCs are to result mainly in the adaptation of modern technologies in small and medium-sized companies that act in the region, and thereby to increase the innovativeness and competitiveness of companies and regional economic structures (Szerenos, 2008, p. 11). According to the subject literature, there are two main types of TTCs. The first one concerns academic technology transfer centers, which are mainly engaged in promoting knowledge created at universities and helping, in particular, small and medium-sized companies enhance their innovation capacity. With regard to the second type, these are external centers that provide services for companies and other interested entities (Dzierżanowski, Szultka, & Włoch, 2008; Matusiak, 2006). The main tasks of TTCs include informing about the conducted research at universities, looking for opportunities to sell the obtained results as well as partners and clients for further projects, promoting the cooperation between universities and the market, and providing such forms of cooperation with appropriate legal forms (Lis, 2013).

To sum up, technology transfer centers act as bridging institutions between science and industry in the process of technology transfer. For this purpose they should build networks of cooperation between science and business, help conclude research contracts and create databases with information on new available technologies. TTCs also organize flows of innovation activity results, such as patents and publications, from scientific research institutions to industry. In TTCs, which may act as innovation centers or R&D units at universities, researchers and scientists cooperate with entrepreneurs and their employees, preparing new solutions and technical improvements useful for the companies. The cooperation of this type, based on knowledge about the needs and preferences of consumers, is thus particularly important for the decision-making stage on the R&D directions. At this stage are designing prototypes of technological innovation and their further implementation on the market (Majewska-Bator, 2009; Majewska-Bator, 2010; Xu, 2013).

3 The activity of Polish Technology Transfer Centers and their assessment from the perspective of R&D units

3.1 Methodology

The following research results on the activity of Polish technology transfer centers were obtained in the second half of 2015 as a part of the project *Przeprowadzenie kompleksowej ewaluacji sześciu wybranych instrumentów polityki naukowej i innowacyjnej realizowanych przez Ministerstwo Nauki i Szkolnictwa Wyższego* (Eng.: A comprehensive evaluation of six science and innovation policy instruments carried out on behalf of the Ministry of Science and Higher Education – the authors' translation). One of the assessed instruments was the study *Inkubator innowacyjności* (Eng.: Innovation Incubator)⁵⁴ carried out by virtue of the Notice of the Minister of Science and Higher Education of 26th July 2013. Aimed at supporting the process of research data and development work management, particularly as regards commercialization, it focused on science-oriented entities. The project concerned science-oriented entities that run intensive activities in commercializing research data and development works, creating bridges between the scientific and business environments, and performing a series of tasks towards the implementation of research data and development works in certain market-based solutions. In consequence, 14 universities were granted the support under the

⁵⁴ Anna M. Lis was the main expert in the study of *Przedsięwzięcie "Inkubator innowacyjności"*; she is also the author of chapter 7 of this report.

project. In accordance with the competition regulations, the TTCs, operating within the academic structures, were obliged to perform 4 types of tasks: to initiate and enhance the cooperation between the scientific and business environments, to prepare a project on commercializing research data and development works, to manage the technology portfolio and to carry out the work of the pre-implementation phase⁵⁵.

The research on the TTCs was carried out from the perspective of the scientific staff employed in the scientific units granted with the Przedsięwzięcia project support. It consisted of 820 scientific employees, among whom nearly a half (approx. 47%) were doctors (i.e. PhD), almost 25% (approx. 23.2%) were habilitated/associate professors and 19.8% had the degree of professor (which indicates they were respondents with scientifically approved competences). The remaining respondents (10%) held the degrees of MScs and BSc.

In order to collect the data, a standardized questionnaire was applied, which was distributed by means of computer assisted web interview (CAWI). The questionnaire contained 20 questions that referred to 4 research issues:

- the scientists' cooperation with the business sector (their experience in cooperation with entrepreneurs, the scientists' operations in the field of technology transfer);
- the scientists' knowledge of TTCs and their services (the level of their knowledge of the TTCs operating in the home university structures, the sources and availability of information on the TTCs and the opportunities of using the information);
- the scientists' experience in cooperation with TTCs (the percentage of scientists cooperating with TTCs, the party initiating the cooperation, the support received from TTCs);
- the assessment of the TTCs' services from the scientists' perspective (the adaptation of the services to the scientists' needs, the level of satisfaction with the services, the role of the TTCs as an intermediary in cooperation with entrepreneurs, the level of the TTC personnel knowledge of the research work carried out by the university staff).

3.2 The science-business cooperation

As it was stressed above, the science-business cooperation is the main element that determines the development of technology capabilities. The scientific employees that participated in the research fell into two main categories: the members of the staff who had established cooperation with the business sector within the recent 2 years (slightly more than a half – 58.3% of the respondents) and the ones who had not initiated such partnership (37.7%) (the remaining respondents were not able to identify themselves with either group). As for the forms of cooperation with entrepreneurs, the most popular were the implementation of research-development projects (on the companies' request), consulting not related with the use of laboratory equipment (expertises, analyses, opinions), and measurements and analyses with the use of laboratory equipment (each form of the cooperation was marked by almost a half of the scientific staff that remained in professional contacts with the business sector). In the case of the employees who had not initiated the discussed cooperation, the most common reasons stated by the respondents were the following: "the specificity of the branch of science" ("since it does not deal with any research studies useful from the entrepreneurs' perspective" – nearly 36% of the respondents declared this reason), "the lack of the entrepreneurs' interest in the subject" (30.1% of the responds in this group) and "a general lack of time" (22.3%). It is also crucial to emphasize that 18.8% of the questioned individuals had "no information on how to build and maintain such cooperation" and 17.8% believed that "the scientific unit does not provide a sufficient support to maintain cooperation with the business sector". This fact can decrease directly a capacity for the development of technological capabilities of the science sector and indirectly of the business sector.

The authors' study also indicates that within the analyzed period of time the majority of the scientists (nearly 52%) did not assemble at their university department, or as a research team, with any form of technology transfer (and 22% of the individuals were unable to state it clearly). Finally, even if such activities were undertaken, they mostly concerned the sale of know-how (unpatented knowledge) – 10.5% of the responds, granting licences – 9.1%, drawing up a know-how contract – 7.3%, and the sale of industrial property rights (patents, industrial designs, utility models) – 7.1%. Too small scale of technology transfer between the science and business sectors

⁵⁵ Komunikat Ministra Nauki i Szkolnictwa Wyższego z dnia 26 lipca 2013 r. o ustanowieniu przedsięwzięcia pod nazwą „Inkubator Innowacyjności”; Ogłoszenie Ministra Nauki i Szkolnictwa Wyższego w sprawie konkursu w ramach przedsięwzięcia pod nazwą „Inkubator Innowacyjności”, czwartek, 1 sierpnia 2013 (Eng.: the Notice of the Minister of Science and Higher Education of 26th July 2013 on the project *Inkubator Innowacyjności*; The Announcement of the Minister of Science and Higher Education of 1st August 2013 on the competition within the project *Inkubator Innowacyjności*; the authors' translation).

constitutes a barrier in the development of technological capabilities. Moreover, the results show that occurs mainly the transfer of explicit knowledge, no sharing of tacit knowledge. Tacit knowledge sharing is more conducive to heighten quality of human capital and enhance learning capability (see Fig. 1).

3.3 Knowledge of the Technology Transfer Centers and their services

The completed research reveals that the scientific employees present wide knowledge concerning TTCs – over 82% of the respondents knew about the TTCs operating within their home university structures. The most successful ways of transferring information on the existence and activity of the centers were: “distributing information by the very technology transfer center” (in this way over a half of the questioned scientists found out about the TTCs), “other members of the staff” (33%) as well as “the web page of the home institution (33% of the respondents), and “a newsletter sent by the home institution” (over 25%). The majority of the respondents (approx. 72%) take the view that the information on the TTCs’ services is available in their home institutions. The results suggest that wide knowledge concerning TTCs is not translated on such a large scale into cooperation of the scientific employees with TTCs. In order to develop technological capabilities of the science sector should TTCs thus increase promotional activities and make their employees more involved in a direct way in persuading that this cooperation is not something difficult and a waste of time.

3.4 The scientists’ experience in cooperation with TTCs

The results of the study indicate that only 42% of the research scientists have benefited from the services of the TTCs (operating in the home universities). Nearly a half of the cases (47.2%) were initiated by the scientists themselves, almost 20% by other scientific workers, over 25% by the TTCs’ staff and only 1% by the enterprises. It is worrying that enterprises do not undertake cooperation with TTCs on their own initiative. It may be due to a lack of knowledge about TTCs or their low assessment by enterprises. However, it requires further study. Undoubtedly, it is a serious barrier in the development of technological capabilities through cooperation between the science and business sectors.

The services offered by the TTCs are useful tools increasing in direct or indirect ways technological capabilities of the science and business sectors. It was explained above (see also Fig. 1). With regard to the services provided by the TTCs, the most popular were the following ones: “a legal support in technology transfer: granting licenses, the sale of rights to research results, establishing a company, the sale of know-how”, “assistance in preparing a grant application” and “distribution of project results (by means of publications, conferences, fairs)” (the percentage of the scientists-customers of the TTC services was 33.8%, 30.8% and 27.8%, respectively). The members of the staff enjoyed the services, particularly in intellectual property rights (27.4%) and external funding (25.8%). They also acknowledged that the intermediary role of the TTCs (in the contacts with the entrepreneurs) was equally important – approx. 25% of the employees benefited from the centers’ assistance in searching for business partners (26.4%) and negotiating with business partners (23.4%).

3.5 The assessment of the TTCs from the scientists’ perspective

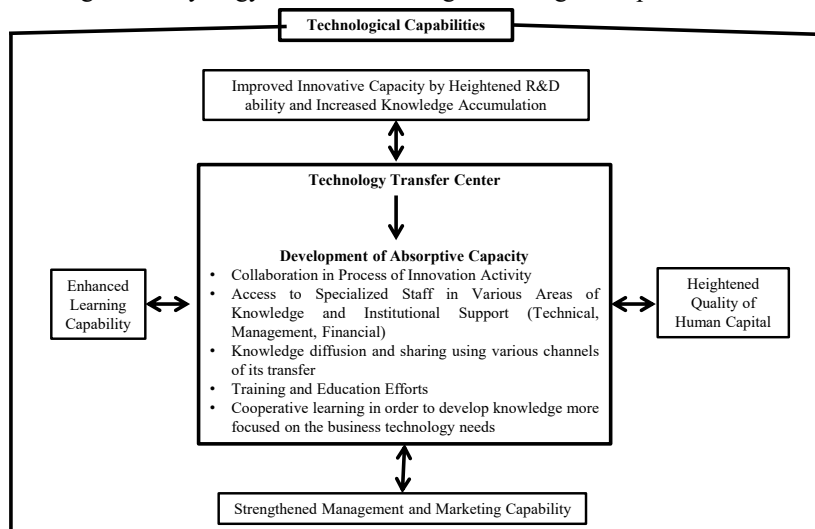
The assessment of the TTCs’ activities made by the cooperating scientific personnel provided relatively high scores. The highest scores the centers received concerned their training activity – “organization of training/internship in another scientific unit” and “organization of training/internship in a company” received 4.67 points and 4.6 points (out of 5), whereas “participation in the training/course on technology transfer” and “participation in the training/course on the protection of intellectual property” scored 4.4 points, respectively. The much lower rates the TTCs received in the area concerned the centers’ assistance “in finding business partners”, “coordinating the formal or the financial part of projects financed with public funds”, “in marketing activities aimed at enterprises” or “in any forms of technology transfer (licensing, selling the rights to research results, establishing a company, the sale of know-how” - each area received 3.8 - 4 points. In addition, the forms of the activities mentioned above were the ones the respondents missed the most as far as the TTCs’ service offers are concerned. It must be emphasized that all the highest rated services of the TTCs referred to the intermediate, “soft” forms of impact on the area of technology transfer rather than on a direct action aimed at carrying out the process in practice.

The negative conclusions of the scientists’ assessment were mainly due to the low competences and scarce commitment of the center employees as well as the extensive bureaucracy of the centers. With regard to the TTCs’ intermediary role in the business contacts, it was poorly assessed. Over a half of the questioned scientists, experienced in cooperation with the TTCs operating within their home universities, stated that over the period of two years preceding the research the centers had shown either no (28.5%) or very little (24.3%) engagement in arranging contacts between science and business. The contrary opinion was presented by 21.3% of the

respondents – 7.7% of them claimed that their center had very often made effort in the discussed issue and 13.6% claimed that the event had happened relatively often. The respondents also assume that the centers that act within their university structures are not aware of what research studies are carried out by the research teams – such an opinion is held by over a half of the questioned individuals (experienced in cooperation with TTCs), whereas more than 1/3 think opposite, explaining that their centers are familiar with the case.

What is essential in the development of technological capabilities matter is the fact that the majority of the respondents have not cooperated with TTCs so far. In their opinions, is mainly due to their “little activity in cooperation with companies, which does not generate the necessity to invite such centers to cooperation” (such a comment was made by nearly a half of the scientists not engaged in the cooperation with TTCs), “no need for such a cooperation due to independent individual contacts with companies” (16.8%) as well as “a lack of appropriate services of the TTCs that would satisfy the needs” (16.5%). The scientists who had not chosen the TTCs’ assistance due to the mismatch between the services offered and the services required (62 people in the research sample) listed the following services as the most expected from the TTCs: “assistance in preparing grant applications” (marked by 71% of the respondents in this group), “assistance in finding business partners” and “support in marketing operations aimed at enterprises” (53.2% of the answers, respectively), and “coordinating the formal or the financial part of projects financed with public funds” (50%). It is worth noticing that similar services were indicated by the respondents experienced in contacts with TTCs with regard to a specific form of support they had wished but had not been offered. Therefore, the results of the study show that in the case of cooperation of TTCs both with the science and business sectors, there is a gap in the development of technological capabilities in a broader perspective. Reminding it comes to creating various types of capacities and abilities connected with shaping better conditions for a technological progress.

In the paper authors tried to explain how technology transfer centers can contribute directly and indirectly to the development of technological capabilities. The model presented in Figure 1 shows possible directions of the impact of TTCs on technological capabilities of science and business sectors, which were identified by authors. The model was created through the realization of the first scientific aim and analysis of obtained empirical findings. This model presents feedback loops between a center and its environment, which lead to the development of technological capabilities. The feedback loops are the result of cooperation between the science and business sectors and generate synergy effects enhancing technological capabilities and thus productivity.



Source: created by authors

Figure 1. Technology Transfer Center as a Key Factor in the Process of Technological Capabilities Upgrading

Conclusion

The research study reveals that the analyzed technology transfer centers of Poland have an immense potential to provide an effective support for the development of technological capacity of the companies operating in the local area. Unfortunately, the potential is not properly used due to the centers’ insufficient scale of activity both in establishing and maintaining contacts with the business sector as well as commercializing technology in its further stages (e.g. carrying out the pre-implementation tasks). Nevertheless, it is the above activities of the

TTCs that could significantly contribute to strengthening the technological capabilities of enterprises and developing their innovative activity.

What proves the centers' imperfection in establishing and maintaining science-business contacts is, among others, a high percentage of the scientists not involved in the cooperation with entrepreneurs so far as well as the scientific employees who do not find the TTCs' services applicable to their own needs. Additionally, the TTCs were not frequently enough engaged in establishing and guiding the cooperation between science and business. What is more, the TTCs were also not active enough in the academic environment, namely in initiating the cooperation with scientists and finding out the character and the areas of the research and development works carried out at university.

The above main limitations concerning the TTCs are in part caused by some weaknesses of the whole technology transfer system in Poland (Bąkowski & Mażewska, 2012; Lis, 2013): a huge discrepancy between the science and business spheres (visible, for example, in a poor quality of cooperation) and a low level of innovation capacity of Polish economy (and thus limited capabilities of the enterprises to absorb the research and development work results). Therefore, the discussed study data should be complemented with some more advanced case studies that would include the three parties participating in the technology transfer process, namely the R&D sector (scientific employees who generate innovative solutions), the business sector (entrepreneurs, who basing on the solutions, develop their own technological capabilities) and technology transfer centers (which act as intermediary units between the two parties).

Finally, the authors want to emphasize the need for a more effective support for the companies in their innovation activities by the TTCs in Poland, which could result in strengthening technological capabilities in both sectors, i.e. science and business. However, this means intensifying the activities that promote cooperation between the science and business sectors as well as indicating how both sides could benefit through their participation in TTCs.

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*SPECIFICITIES OF STRATEGIC CONTROLLING IN INNOVATIVE
ENTERPRISES (AFTER THE EXAMPLE OF THE BULGARIAN KNITWEAR
INDUSTRY)*

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Abstract

Purpose of the article The purpose of this paper is to highlight some important characteristics and to propose ideas for improving the strategic controlling in innovative enterprises.

Methodology/methods To achieve the purpose of the article, techniques of analysis, comparison and synthesis, as well as a case study concerning the Bulgarian knitwear industry, have been used.

Scientific aim To introduce specific non-financial indicators, connected with the controlling in innovative enterprises in Bulgaria.

Findings The findings show that the indicators applied by current systems for strategic controlling in innovative enterprises do not differentiate between the process of selection of innovative projects, including testing of the innovation idea, building of teams to implement it, setting-up budgets to complete innovation activities, and the process of reporting the progress of the overall business achievements. There is a need to introduce other, mostly non-financial indicators, connected with the assessment of the requirement of the market for innovative products.

Conclusions The conclusions and recommendations offered in this paper stem from on a study referring to eleven innovative Bulgarian enterprises active in the knitwear branch.

Keywords: strategic controlling, innovations, innovative enterprise, entrepreneurship, managerial accounting

JEL Classification: M15, M21

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Introduction

Nowadays, the problematic of strategic controlling in innovative enterprises becomes increasingly important due to the crucial role of innovations in business development. This requires first and foremost rethinking of existing perceptions and stereotypes. The purpose of this paper is to highlight some specifics and to propose recommendations for improving of the strategic controlling in innovative enterprises.

The traditional understanding of controlling is connected with the need to provide accurate financial information in making decisions with view of the economic development of an enterprise. This information is mostly associated with revenues, costs, and cash in-and outflows, as well as with the resulting overall efficiency and effectiveness of business activities. The already taken decisions (strategic, tactical and operational) are then subject to implementation, and here comes the true role of the controlling function (Papazov, 2014; Hofbauer & Bergmann, 2013) to:

- reduce deviations from the pre-set parameters in case of unexpected events, and
- contribute to the rapid restoration of the pre-planned strategic concept for company's development.

At the same time, "strict" management control systems are perceived sometimes as a "barrier" for introducing of innovative ideas. Leading is the notion that innovations are linked to the search of new opportunities and relationships, and this often leads to uncertain results or even to risks of failure. Since traditionally organized control systems are designed to reduce risks and deviations from the pre-planned results, contradictions may occur (Davila, 2005).

Additionally, the process of strategy formulation in innovation companies is not always allocated properly. Strategic alternatives concerning continuing innovations (especially in new products) are mostly formulated following the "bottom-up" approach. This sometimes brings confusion in the control system, as it assumes its concentration in lower hierarchical levels. Controlling with an adequate reporting system based on results of specific innovation projects gains importance.

Indicators, which current systems for strategic controlling in innovative enterprises apply, are connected primarily with the processes of selection of innovative projects, including testing of the innovation idea, building of teams to implement it, setting-up budgets to complete the innovation activities, and reporting the progress of the overall achievements.

This paper summarizes the quests concerning the chosen thematic and the practice of systems that are called upon to promote and support innovative enterprises in Bulgaria. On this basis, recommendations for improving strategic controlling in innovative enterprises are made.

1 Strategic controlling and innovations in an enterprise

Literature review shows that industrial innovations may take different forms. They vary from fully new products or processes to significant novelties leading to a better product or process quality, including new or improved organization of work or profound relations between suppliers and consumers (Ciemleja & Lace, 2008; Milichovský & Simberova, 2015).

In a country in transition like Bulgaria most of the industrial enterprises are considered non-innovative: less than one third of them are practicing some kind of innovation (Table 1). Technological innovations as one of the structural components are slightly dominant over non-technological innovations, which is consistent with the trends in the developed economies. But there is a way to go to reach the 2:1 proportion in favor of technological innovations as reflected in the EU average value.

Table 1 Innovative industry enterprises in Bulgaria

Industry in Bulgaria Size class of enterprises (by number of employees)	Innovative enterprises (incl. enterprises with technological and non-technological innovation)	Enterprises with technological innovation (incl. enterprises with product and process innovation)	Enterprises with non- technological innovation (incl. enterprises with organizational and marketing innovation)
Industry	31.0%	21.6%	18.4%
10 - 49 employees (small enterprises)	22.7%	12.9%	15.5%
50 - 249 employees (medium enterprises)	40.4%	27.4%	26.2%
250 or more employees (large enterprises)	59.0%	45.6%	44.8%

Source: National Statistical Institute of Bulgaria

Among the main reasons the following can be pinpointed (BSMEPA, 2013):

- The typical for many (especially small and medium) companies need for survival by maintaining of market positions with the help of established products.
- The high degree of international competition.
- The presence of too many unknowns when doing innovations.
- Limited opportunities for research and development due mainly to lack of information and knowledge in this field, and to limited funding.
- Significant costs for registration and maintenance of patents and other intellectual property.

The focus of this paper is on innovations, understood as an on-going process, i.e. on the so called “continuing” innovations. One of the main characteristics of the continuing innovation process in enterprises concerns the frequent re-design of offered products or implemented production technologies. Because new or significantly improved products or processes must satisfy consumer or production needs, every kind of introduced innovation must be backed by studying the opinion of the most important marketing or processing groups (Kirova, 2009; Kirova, 2010; Meiliene, Neverauskaite & Aidis, 2015). Based on the results from such investigations, managers organize the introduction of new products and processes to satisfy these needs (Zizlavsky, 2014; Papazov & Mihaylova, 2010; Dimitrakieva, 2015; Dubickis & Gaile-Sarkane, 2015).

Obviously, innovation activities and processes can vary from industry to industry, but as a rule they always stay close to strategic management decisions. The latter, as known, determine decisively the way companies compete in a market (Simons, 1994; Papazov, 2014; Milichovský & Simberova, 2015). With regard to this, the strategic controlling plays a balancing role between different company activities and decisions, while focusing on the main ones, concerning the production of goods (services) and the trends in their development (Papazov & Mihaylova, 2012b; Simeonov & Lambovska, 2011; Hofbauer & Bergmann, 2013).

Some authors express the opinion that innovations are more successful when company’s goals are “clear and stable for a sufficiently long period of time” (Amabile, 1998; Davila, Foster & Li, 2005). Key performance indicators are essential element for measuring performance to help organizations in achieving their objectives (Sychrova & Simberova, 2012; Korab, 2012). Strategic management has to provide clear goals combined with required resources. It must also search for new decisions, methods, etc. In addition, strategic controlling has to be orientated to these goals, the strategy, its way of implementation, and the indicators reflecting the success of failure of company’s development. And more, the strategic controlling calls for new or adapted tools to assist management.

2 Description of the study and the main findings

The study, described below, has been accomplished in two stages. The first one is connected with investigation why enterprises have to adapt the strategic controlling to their innovative activities and products. This question has been set to innovative Bulgarian companies, mostly small and medium sized enterprises (SMEs) – 95%, from the knitwear industry situated in Southern part of the country. The South Central region of Bulgaria comprises almost a quarter of the whole country. The region is second after the Southwest region in terms of gross domestic product (GDP), research and development (R&D) spending (5.36% of the total R&D spending in Bulgaria, on the Eurostat data for the last five years) and the number of applications submitted to the National Innovation Fund (NIF).

The territorial restraint enables a more thorough study of the statistical population among manufacturers of knitwear fabrics, because about 80% of the enterprises are concentrated in this region. With regard to this and to the selected object of the survey, an investigation has been made concerning the size and the ownership of capital, the legal form, type of innovation activities, planning and control mechanisms, etc. Detailed answers have been collected by combining the interview and the case study methods.

A specific feature of the knitwear branch structure in Bulgaria is that there is only *one enterprise for knitted fabrics that disposes of a full production cycle*. As such, the company is capable of doing not only knitting, but also final fixation of fabrics. For comparison, other enterprises can carry out only particular activities connected mostly with knitting. The full production cycle automatically make this company a branch leader (Papazov & Mihaylova, 2012a).

With regard to the above mentioned branch specific, *ten companies with activities related to knitting fabrics only have been chosen as units of survey*. Thereto *the branch leader* has been added as well. Because of the novelty of the problem for the Bulgarian practice, the study had a relatively limited character.

The second stage of the research examines the concrete indicators, which current systems for strategic controlling in innovative enterprises apply. The focus of this stage is on the product development as one of the aspects of the company's innovation activity. In Bulgaria, the knitting industry has been traditionally orientated towards on-going product research and development. This aspect constitutes one of the most important characteristics of their innovation strategies (Papazov & Mihaylova, 2008).

The results from survey's **first stage** show that there is a necessity to adapt strategic controlling to the enterprise's innovative activities. This is due to the fact that a "strict" management control system appears not acceptable for innovative oriented enterprises, especially for the branch leader (the leading company with full production cycle in Bulgaria). The main reasons for the required adaptation of strategic controlling in innovative enterprises (noticed approximately by 80% of the interviewed) are summarized in the following Table 2.

Table 2 Main specifics of strategic controlling in investigated Bulgarian knitwear companies with on-going innovations

Main specifics of strategic controlling	Leading enterprise	Other enterprises
Selection of innovative projects not only on the basis of financial indicators, but after considering customers' requirements	Yes	Yes (86% of the interviewed)
Team formation to work on innovative projects	Yes	Yes (84% of the interviewed)
Progress reporting on selected innovative projects	Yes	Yes (80% of the interviewed)
Providing comparable periodic reports for innovative projects	Yes	–
Budget control on innovative projects	Yes	Yes (72% of the interviewed)
Controlling of product portfolios on the basis of the calculated financial contribution of every innovative project	Yes	Yes (70% of the interviewed)

Source: Own study, 2015

The results from the survey's **second stage** are oriented towards derivation of main indicators for strategic controlling, as classified by the studied Bulgarian enterprises themselves (Table 3). The overall picture shows that non-financial indicators have priority over financial ones when doing on-going (in this case product) innovations. The reason for that can be attributed to the likelihood of uncertain (risky) results. This constitutes a line of demarcation between the traditional ("strict") controlling and the strategic controlling for innovative enterprises.

Table 3 Main indicators for strategic controlling in investigated Bulgarian knitwear companies with on-going innovations

Main indicators, ranked by enterprises	Leading enterprise	Other enterprises
Customers	Yes	Yes (84% of the interviewed)
Quality	Yes	Yes (81% of the interviewed)
Product characteristics	Yes	Yes (80% of the interviewed)
Time (Product Life Cycle)	Yes	Yes (77% of the interviewed)
Budget (Cash flows)	Yes	Yes (76% of the interviewed)
Contribution	Yes	Yes (71% of the interviewed)

Source: Own study, 2015

The research undertaken in Bulgarian knitwear companies with on-going innovations clearly shows that there is a need to re-think the architecture of the strategic control system. Innovative product development and

diffusion require from the strategic control system to turn to indicators that are different from the traditional (mostly financial) ones. Non-financial indicators focusing on the assessment of the consumption and market (customers, quality, product characteristics, product life cycle, etc.) come to the fore.

This, in turn, requires adaptation of the strategic control instruments. The application of adapted controlling means is appropriate at least until the first phase of the product life cycle, the so called market introduction phase, has been completed. Using the terminology of the Boston consulting group, this is the phase where “question marks” take roots in their famous growth–share matrix model.

Only when innovative products enter the “star” phase (corresponding to the quick growth phase of the product life cycle model), strategic controlling based on traditional tools like budgets, cash flows, etc. are reasonable to be introduced. Such a logic based on using indicators with different characteristics can be deduced after applying other strategic model as well, for example the Relative advantage matrix or the SPACE matrix model (Papazov & Mihaylova, 2012b).

In this way, the strategic controlling will help establishing constant feedback instruments and techniques for gathering useful information from customers. Such a control system will help concentrating on specific innovation projects and their results. That is why, the strategic control function as presented in this paper receives the increasing attention of contemporary researchers (Davila, Epstein & Shelton, 2007).

Conclusion

To sum up, the indicators applied by an adapted system for strategic controlling in innovative enterprises should be chosen only after revealing the logic of the selection process of innovative products and processes. On this basis, additional recommendations for improving strategic controlling in innovative enterprises can be outlined. They will affect the multifactorial determinants of innovative managerial decisions and should concentrate mainly on:

- the hierarchy of indicators within an innovative project or a product portfolio;
- the analysis of the causal relationships and correlations between indicators in the different phases of the product life cycle;
- the controlling of product portfolios on the basis of calculated financial contribution of every innovative project;
- the providing of comparable periodic reports for innovative projects as part of strategic controlling in knitwear enterprises (especially in companies with a leading role in the branch);
- the establishing of constant feedback instruments and techniques for gathering useful information from customers;
- the focusing on indicators related to customers as, for example, the number of clients for innovative products; the sales of innovative products; the number of repeat purchases for innovative products; the increase in market share with innovative products, etc.

Having in mind the specifics of the strategic controlling for innovative enterprises (derived from the investigation of the knitwear industry in Bulgaria), a system of planning combined with adequate reporting procedures and connected with the results from specific innovation projects gains importance. In this case, the priority in the controlling module has to be rendered to an analytical accounting construct based on company’s innovative projects. This will trigger activities concerning data collection, and with them the whole process of strategic planning for company’s development.

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OWNER-MANAGED COMPANY: AN ADVANTAGE OR A CHALLENGE?

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Abstract

Purpose of the article Small and medium sized enterprises (SMEs) in Europe represents up to 99% of all businesses and provide two-thirds of the total private sector employment. A large proportion of private-sector enterprises is owned and at the same time managed by individuals or by families. Opinion exists in business literature and among entrepreneurs that growing companies outgrow their founder's managerial capabilities, and unless the founder is replaced or supplemented by "professional" management, performance is predicted to stagnate or decline. This paper contains review literature on challenges for owner-managed companies and owner contribution to performance of the SMEs.

Methodology/methods Literature review is undertaken using the overview method in order to identify ways how owners-managers impact SME management system and performance. Key findings were discussed in three focus groups with representatives of Latvian owner-manager companies during September 2015-February 2016.

Scientific aim To evaluate through literature review the impact of owner-manager personality on SME performance.

Findings This paper identifies variety in terminology around SMEs and their owners-managers, and presents several ways on how owners-manager impacts company management system, performance and culture.

Conclusions The literature review draws attention to the controversy of the topic around role of the owner-manager in small and medium sized enterprise. There is evidence of both differences and similarities between owner-managed and professionally managed enterprises from the management systems and performance perspectives. It is identified that issues of owner-managed companies are discussed in publications, using wide range of terminology, including founder-managed and family-owned companies, owner-CEO, and other. There is need for a further study using holistic approach that will include both internal factors influencing management system and performance of owner-managed small and medium enterprises, as well as external factors, such as stakeholder relationships and market conditions.

Keywords: Owner-Manager, Small and Medium Enterprises, Management, Founder-managed Company, Family business.

JEL Classification: M10, M14

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Introduction

Small and medium-sized enterprises (SMEs) are the backbone of European, as well as many other countries economy. SMEs in Europe represents up to 99% of all businesses and provide two-thirds of the total private sector employment (Wymenga, Spanikova, Barker, Konings, & Canton, 2012). A large proportion of private-sector enterprises is owned and at the same time managed by individuals or by families. Despite of significance of the SME sector to industry, training programmes and business literature tends to use large enterprises and corporations and an examples for best practice and management approaches. Capabilities of SMEs and their management to use and adopt these practices are limited. Number of research and publications on SMEs management is increasing over last years, however, there is a lot of space for speculations on this topic too.

This research was inspired by widely-spread opinion in business literature and among entrepreneurs that growing companies quickly outgrow their founder's managerial capabilities. Unless the founder is replaced or supplemented by "professional" management, performance is predicted to stagnate or decline rapidly.

Research from different countries has presented organization and management systems in the owner-managed businesses as underdeveloped and influenced by strong personal control on the part of the owners. At the same time there are also several studies proving that there is no significant differences found in performance between founder-managed and professionally managed firms.

This paper attempts to survey literature and describe key characteristics of owner-managed and founder-managed companies. Literature is reviewed with consideration to chronology, concepts and thematic arising around topics.

Literature review started with identification of possible variations of terminology and keywords around research topic. First keywords used for literature search included "owner-manager" and "small and medium enterprises". First results showed that there are broad variety of terminology with a similar meaning, and authors use different ways to describe situations. For example, along with the "owner-manager" other terms are used to define person and way of running the company, such as "founder managed company", "owner managed company", "family run business". Term "Family business" is also used to describe type of enterprise.

As result, literature search was conducted with several key words in various combinations: owner-manager; SME (Small-medium sized enterprise); owner personality; founder-manager; owner-managed company; founder-managed company; CEO (Chief Executive Officer); entrepreneurial management; owner-managed firm. Term "owner-managed company" will be used as general term in this paper to include those close meanings from all above mentioned terms, unless reference is made to publication addressing some specific aspect.

This paper consists of five parts: First part focuses on owner-manager implications on company performance. Second part looks in to aspect how owner-managers facilitates development of the management system. Third part of paper looks how company culture is influenced though owner-manager personal values. Next chapters put attention on succession factors, when internal or external factors requires replacement of owner or founder in management role by successor from next generation or professional management. At last, authors give an insight in other researcher attempts to use systemic and holistic way onto owner-managed company development.

Results of literature review suggested that owner or founder in a managerial role can have impact on company performance directly, trough development of the management system and impacting company culture. In line with development of technology, internationalisation of business, political environmental and cultural factors, research topics in entrepreneurship areas have also experienced changes over time. Discussion on research results in focus groups with the representatives of owner-managed companies confirms complexity and controversy of this topic and justifies need for its further research.

1 Implications on company performance

Implications on company performance is the first aspect to investigate possible ways of owner-manager impact on company. Opinion exists among entrepreneurs and in business literature that founder at some point of time shall be replaced or supplemented by "professional" management, to avoid performance stagnation or decline.

However, Willard et.al. research data (Willard, Krueger, & Feeser, 1992) do not support the predictions of this opinion. According to this research, overall, no significant differences in performance were found between founder-managed and professionally managed firms in this study. On average, founder-managed films were somewhat (but not significantly) smaller and were growing at a slightly (but not significantly) lower rate. Founder-managed firms also showed higher (but not significantly so) rates of profitability.

Daily and Dalton study (Daily & Dalton, 1992), as well as Gulbrandsen study on Norwegian private sector owner-managed enterprises (Gulbrandsen, 1996) also find no significant performance differences between firms managed by founders and non-founder managers.

The relationship between family ownership and productivity, with special focus on the role of owner-management was analysed by Barth, Gulbrandsen, & Schoø. (Barth, Gulbrandsen, & Schoø, 2005). The results show that family-owned firms are less productive than non-family-owned firms. This productivity gap is, however, explained by differences in management regime. Family-owned firms managed by a person hired outside the owner family are equally productive as non-family-owned firms, while family-owned firms managed by a person from the owner family are significantly less productive.

Results from these researches leads to conclusion that owner-manager status itself cannot be considered as a single factor influencing company performance.

2 Implications on company management system

According to entrepreneurs opinion and business literature, organization and management systems in owner-managed businesses can be expected to be underdeveloped and coloured by strong personal control on the part of the owners.

Back in 1982 research was conducted by Dhaliwal, Salamon and Dan Smith on relationship between the ownership control status of firms and the accounting methods they adopt (Dhaliwal, Salamon, & Dan Smith, 1982). Authors revealed that there was a significant difference in the depreciation methods adopted by management controlled and owner controlled firms for financial reporting purposes.

A study of total quality management (TQM) adoption practices in family-owned manufacturing firms by Ellington, Jones and Deane (Ellington, Jones, & Deane, 1996) also showed significant differences. Family-owned firms were found more often than other firms to be total “non adopters” of TQM. This study clearly demonstrated that highest family owned firm performance levels are associated with a more holistic and complete TQM adoption pattern.

Considerable evidence shows that strategic planning leads to increased firm performance. Yet, the majority of SMEs do not plan and the reasons why are not well understood. Article “Explaining the Lack of Strategic Planning in SMEs: The Importance of Owner Motivation” (C. Wang, Walker, & Redmond, 2007) questions the common approach to understanding this problem based on identifying business barriers to planning. For the majority of SME owner-operators, business performance often ranks far behind intangible goals such as autonomy, personal satisfaction and lifestyle. Strategic planning may therefore have little value to owner-operators driven by such motivators. This article presents an alternative perspective to the issue by arguing that owner aspirations are integral to whether or not SMEs strategically plan.

The analysis of private Norwegian joint stock companies with at least 15 employees presented by Gulbrandsen (Gulbrandsen, 1996) shows that owner-management is accompanied by a smaller degree of administrative specialization than when the business leader is an appointed professional chief executive, they also show that decisions are no more centralized in owner-managed enterprises than in other enterprises. Moreover, owner-managed companies have introduced planning as a management tool to just as great, or small, an extent as other enterprises.

Above mentioned studies show that there is a variations in approaches how privately owner and owner-managed companies adopt new approached and management systems to company. Evidence finds both some advantages and challenges in these approaches.

3 Personal values orientation

Founders and owners of enterprise have strong enough relationship to company and employees that can influence company development and management system through personal values and attitudes. Several research tries to find linkages between enterprise performance, company management system and owner-manager personal values.

The research on planning, enterprise performance and owner/manager personal values (Kotey, 1995) demonstrates that owner-managers who undertake planning are distinguishable from those who do not plan in terms of personal values and performance levels. The results suggest that, in general, owner-managers place little emphasis on planning. However, some owner-managers undertake more planning than others. Owner-manager who placed greater emphasis on planning were identified with entrepreneurial personal values and with higher performance levels than those with lesser emphasis on planning.

Later Bernices Koteys research was extended to test empirically the relationships among personal values of owner/managers, the strategies they adopt in operating their businesses, and the performance of their businesses (Kotey & Meredith, 1997). It was found that certain profiles of personal values correspond with certain strategic orientations. In conformity with previous research, an association between business strategy and enterprise performance was confirmed.

Edgar H Schein (Schein, 1995) looks in to the Role of the Founder in Creating Organizational Culture. Organizational culture results from the development of ideas that form a pattern of assumptions. These ideas stem from the business founder and are adopted or expounded upon by the founder's select group of close workers. The greatest problem for a first-generation firm with a strong founder-generated culture is in the transition to following generations with the organizational culture intact.

A practical research dated back in 1978 was conducted to study Owner-Manager Personal Values in Black and White Small Business. Authors (Watson & Simpson, 1978) found that there were no significant differences in the personal values orientation of black and white managers and that these orientations did not differ from managers in large business firms.

Poutziouris research (Poutziouris, 2003) look into the strategic orientation of owner-managers of small ventures. The empirical evidence from 922 UK small firm owners-managers identified four generic clusters of owner-managers namely: growth stars, exiters, survivors, and controllers. Research also briefly examines the inter-relationship of small business strategic orientation with structure (e.g. size, age, and sectoral distribution), behaviour (e.g. legal form, family business control) and performance (e.g. growth, profitability).

Publication "What drives entrepreneurial orientation in small firms? The roles of owner-manager and financial conditions" (Soininen, Puumalainen, Sjögrén, & Syrjä, 2015) reveals that personal characteristics of the entrepreneur or top manager as owner's personality, values and identities are recognised as important factors fostering entrepreneurial behaviour, especially in the small firm context. This study investigates the drivers of entrepreneurially oriented behaviour (EO) as a main contributor to entrepreneurship.

Research on owner-manager personal values and attitudes confirmed wide range of ways how company development and performance is impacted. However, these aspects have similar impact both owners-managers as well as professional managers.

4 Succession planning for companies in transition

Several researches looks into process and consequences of the transition from founder managed to professional managed companies and company transitions from founder (owner) to second or third generations.

According to Beckhard & Gibb Dyer study (Beckhard & Gibb Dyer, 1983), in USA Family-owned businesses operate an average of 24 years, which is also the average tenure of their founders. Difficulties arising with major changes in the business, such as selling out or appointing a successor-leader, can be compounded by problems of the founder, the firm's key professionals, and family members. Outcomes of management strategy chosen for continuance of a family-owned business include total control by the founder, founder consultation with selected family members, use of professional advisors, and family involvement. In addition to the founder's perspective and leadership, the strategy chosen for continuity must fit the needs of the business. Authors suggest that for a family business to survive beyond the founder, the founder and/or the successor must design a viable plan for managing continuity.

According to Stavrou (Stavrou, 2003), succession in owner-managed firms is rarely planned. Furthermore, it rarely occurs during the lifetime of the owner-manager. Even when it does, it is often ineffective. Although the literature cites various explanations as to the problems associated with succession in owner-managed firms, these explanations lack a coherent and encompassing theory to explain its dynamics. The author proposes that the issue of succession in owner-managed firms be viewed under the prism of extraversion, a psychological attitude that may help clarify succession's most fundamental features and explain the factors underlying its process.

The failure of family firms to transition to second and third generations has prompted researchers to examine succession processes. Marchall et.al. study (Marshall et al., 2006) proposes that adding demographic and behavioural variables to existing models can enrich theoretical frameworks. Using a structural equation model, it was found that older owner age was positively associated with formal succession plans. However, paradoxically, older owner age was also negatively associated with cooperative conflict management, an approach that was positively associated with the importance of succession planning. Owner age was also positively associated with competitive conflict management, an approach that was negatively associated with formal succession planning. Thus, increased owner age is directly associated with formal succession plans, but indirectly associated with behavioural practices that interfere with succession planning. In addition, the study revealed that, although not

related to owner age, both autocratic and relational leadership are positively related to the importance of succession planning.

Bains (2007) examines the effect of founder team removal on the success of a set of 77 UK venture-backed biotechnology companies. For all five measures, early removal of the founding New Venture Team is correlated with poorer performance than retaining the founding team's skills. The best time to remove the founding team for this set of companies is after IPO. This suggests that venture capital investors' tendency to routinely remove founders and change CEOs on investment is damaging to their own interests as well as those of the founders concerned, and that alternative, more cooperative ways should be sought to retain founders and early executives in meaningful, effective roles in their companies to continue to harness the value that they are observed to add.

Succession planning and owner-manager replacement with professional management appears to be topic of increasing importance over past years. However, change in company management style and management approach is not necessary is consequence of handing over company management to successor. Change in management style is also required by changes in company when it is turning to growth, reaching maturity or experiencing decline. Various researchers on organisational lifecycle theory suggest several models for defining these phases and stages. According to Adizes (Adizes & Naiman, 1988), inability for owner or founder to successfully overcome organisation development challenges is defined as situation of the "Founder or Family Trap". Organisational lifecycle theory shall be one of theories used for further research on owner-managed company development.

5 Systemic view on owner-managed companies

Previous parts of this paper shows that it is not enough to look on one single aspect of company, would it be performance, management system, culture or succession planning. There is need for a systemic and holistic view. Several authors suggest structured and systemic view trying to link owner personality aspects, management system and company performance.

Richbell (Richbell, 2006) explores the ways in which the characteristics of the owner-managers of small firms influence whether or not those firms have a business plan. The focus is primarily on antecedent influences on owner-managers such as education and prior experience. Around half the sample of owner-managers possess a business plan. Antecedent influences on owner-managers showing a significant association with the possession of a business plan include an above average level of education, previous work experience in a large firm immediately before setting up their firm and running firms in sectors outside their previous experience. Not surprisingly, possession of a business plan showed a positive association with those owner-managers with a growth orientation. It is concluded that owner-manager characteristics can be important in explaining the presence/absence of a business plan within the small firm.

Apart from starting, growing and/or sustaining a business, owner-managers in small firms have the responsibility to balance business goals and managerial priorities, with ownership control tendencies and family values (as in the case of the prolific family enterprise) in a fashion that can comfort all business stakeholders. Empirical paper "Leadership Styles, Management Systems And Growth: Empirical Evidence From UK Owner-Managed SMEs." (Wang, 2010) reveals that the managerial style of entrepreneurs is influenced by a series of demographic and situational factors. Moreover, owner-managed businesses characterised by delegation of authority appear to achieve higher growth in sales and operationalise in a more professional way.

Research "Small business performance: Business, strategy and owner-manager characteristics" (Blackburn, Hart, & Wainwright, 2013) contribute to the understanding of the factors that influence small to medium-sized enterprise (SME) performance and particularly, growth. The results suggest that size and age of enterprise dominate performance and are more important than strategy and the entrepreneurial characteristics of the owner. Having a business plan was also found to be important. The results suggest that policy measures that promote the take-up of business plans and are targeted at younger, larger-sized businesses may have the greatest impact in terms of helping to facilitate business growth. A novel feature of the models is the incorporation of entrepreneurial traits and whether there were any collaborative joint venture arrangements.

The article "A new typology of micro-firm owner-managers" (Jaouen & Lasch, 2013) explores the extent to which the views of micro-firm owner-managers regarding growth and lifestyle issues affect their entrepreneurial behaviour. Typology suggested consists of four owner-manager views associated with success, subsistence, hedonism and paternalism. This study investigates the differences in the behaviours associated with these four profiles. The representatives of only two types (success and paternalism) 'want' to grow; conversely, owner-managers of the other two types (hedonism and subsistence) do not. The findings show that micro-firm owner-managers are driven by varied and sometimes profoundly divergent views which will have substantial effects on a firm's strategies and development.

Systemic view allows to obtain better and comprehensive view on SME development, including aspects specific to owner-managed companies. As the economic importance of small and medium sized enterprises (SMEs) and entrepreneurship has increased during last decades significantly, it is valuable to investigate further the underlying mechanisms of entrepreneurial activity in SMEs.

Conclusion

Economic importance of small and medium sized enterprises (SMEs) and entrepreneurship has increased during last decades significantly, so intensity of publications on SME management issues has increased too. Range of topics has broaden over time linking the management, planning and accounting practices with the owners and founders cultural, psychological and leadership aspects.

Literature review undertaken in this research shows that owner-manager can impact SME performance through the development of management system, affecting organisational culture, setting strategy, and in other combined and more complex ways. This research shows that owner-manager personality and ownership status of the company management are not the ultimate factors impacting company performance.

There were several studies which did not support opinion expressed among entrepreneurs and in business literature that founder at some point of time shall be replaced or supplemented by "professional" management to avoid performance stagnation or decline. There are research which found no significant differences in performance between founder-managed and professionally managed firms. However there is some evidence that founder-managed firms were somewhat (but not significantly) smaller and were growing at a slightly (but not significantly) lower rate, and founder-managed firms also showed higher (but not significantly so) rates of profitability.

Differences are noticed on way how companies develop their management system – develop strategy, perform planning, adopt TQM systems. However these aspects are related not just to ownership status of company management, but to management competence and personal traits. Among factors that influence development of the management system and company performance are noted motivation, risk tolerance, management style. Competence and style play essential role also in specific situations, such as company transition from founder to the second or third generation or management change resulting from the IPO process.

Discussions in focus groups conducted during September 2015- February 2016 proved that owner-managed companies experience wide range positive and negative effects, similar to mentioned in research.

As SME importance is increasing over time, it is valuable to investigate further the underlying mechanisms of entrepreneurial activity in SMEs. Ownership status of the company management is just one aspect that influences management system and performance. There is need for a further study using holistic approach that will include key factors influencing management system and performance of small and medium enterprises, organisational lifecycles, as well as personality factors of company owners and management.

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*EXPORT BARRIERS PERCEIVED AS A FUNCTION OF THE DESTINATION
MARKET: THE CASE OF SMALL AND MID-SIZE SPANISH EXPORTING
FIRMS TO LATIN AMERICA*

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Abstract

Purpose of the article The purpose of this paper is to identify and discuss the export barriers, propose and test a new scale, and to verify that the relative importance attributed to the different export obstacles could vary as a function of the company's export market.

Methodology/methods A questionnaire was sent to 2590 Spanish firms related to exporting. Responses were analyzed through a dimensionality reduction procedure (from a list of individual obstacles) to yield seven composite factors: knowledge barriers, exogenous barriers, cultural barriers, private support and logistics barriers, customs barriers, resources-based barriers, and market adaptation barriers.

Scientific aim Since there is neither a homogeneous number of existing barriers and types nor a uniform criterion of relative importance, typology and scales to embrace them, we contribute to shed light on the relative importance attributed to the different export barriers and how they vary as a function of the company's export destination, proposing a new scale.

Findings The proposed model was finally accepted and interesting findings were achieved regarding the differences in the export barriers faced by firms in the different destination territories. Findings such as transportation costs being the lowest perceived trade barrier in Latin America or tariff barriers scoring similar in Latin America than in Europe (while being a European Custom Union) create a ground for new studies and discussions on international trade.

Conclusions This study helps understand some aspects which have been insufficiently covered in the literature on export barriers and makes some findings which compliment the existing literature and sets new paths for future researches. For example, the validity and relevance of the new scale, as well as the different obstacles perceived, based on the export's final market.

Keywords: Internationalization; Export barriers; Latin America.

JEL Classification: M21; M31; F23

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Introduction

Exports constitute a major competitor of foreign direct investment as the preferred and first way of doing business internationally (Lages et al., 2008; Hollensen and Arteaga-Ortiz, 2010; Pinho and Martins, 2010; Tang and Liu, 2011; Uner et al., 2013) and it leads higher competitiveness based on the reduction of transaction costs (Rivas and Mayorga, 2010).

Managers realize that exporting can take many forms, and the choice of the best alternative will depend upon the resources of the firm as well as the opportunities and obstacles, real and perceived, to be found in the destination market (Leonidou et al., 2010).

First of all, managers realize that in many instances firms get involved in export activities once a firm receives some orders for their products and services. If they are filled and end up abroad, it has a major positive impact because it means for the firm to enter what is known as an export awareness stage (Czinkota et al., 2004). External factors at home and abroad influence the entry mode decision through exports (Shamsuddoha et al., 2009; Arteaga, 2013). Whether an indirect or a direct export mode is considered, a thorough discussion of the factors is out of the scope of this paper but it is provided elsewhere in the literature (Root, 1987). The point to make, however, is that the export mode, in spite that it depends on several important aspects such as product exportability, company suitability, financing, logistics, among others, it cannot underestimate the importance of the barriers that can be found in the destination market. These barriers, perceived and real, keep unfolding as a result of changing conditions due to the role played by two fundamental vectors that shape the world today, technology and globalization.

Conventional wisdom may suggest that, given a heritage through historical, cultural and linguistic ties, it is going to be much easier for Spanish firms to export to Latin American countries than for firms from other countries of the world. In addition, large Spanish firms have achieved a relatively successful positioning in Latin America through their active participation in the first wave of privatization in the region through foreign investment (Arteaga, et al., 2007)

Nonetheless, the significance of export barriers in its many forms, formal and informal, explicit and implicit, real and perceived, direct and indirect, material or subtle, makes a study of this nature of the most importance to identify and test the domain of these barriers in a region that pursued for most of the past two decades a policy of economic openness and to give the quick impression of the easiness to get into these markets. In effect, Latin America undertook a major economic reform that went deep to the roots as specified by the ten policy prescriptions known as the Washington Consensus of 1989. Trade liberalization was one of these to point out that quantitative trade restrictions should be rapidly replaced by tariffs, and these should be progressively reduced until a uniform low tariff in the range of ten percent (or at most around twenty percent) is achieved.

Despite the economic openness of the Latin America region as seen from the trade liberalization standpoint or from other major important measures such as financial liberalization, exchange rates, privatization and foreign direct investment, deregulation, property rights, tax reform, public expenditure priorities and fiscal discipline, it is relevant as an empirical question: to ask whether or not trade liberalization has been in fact a facilitator or a deterrent of exports to the region. Therefore, one purpose of this paper is to identify and discuss the export barriers perceived on destination markets when small and mid-size Spanish firms export to countries in Latin America. Importantly, findings in one specific region are compared with the results produced by the same company when exporting to a different market, in the European Union, Africa or the rest of the world.

The rest of the paper is organized as follows. The ensuing section reviews scholarly works on export barriers to propose some testable hypotheses suggested by the literature. Next, the methodology followed in this study is described in terms of the unit of analysis, the scale measurement, the structured instrument utilized in the survey stage, and the type of statistical analysis formulated. The following section discusses the results. The final section summarizes the paper and provides some concluding remarks.

1 Background

Most of the studies on export barriers acknowledge the existence of a relationship between the perception to export barriers and the degree of export development (Kahiya and Dean, 2016). However, a definition of export barriers is rarely proposed (Kedia and Chhokar, 1986; Christensen et al, 1987.; Sharkey et al., 1989; Gripsrud, 1990; Yang et al., 1992; Westhead et al., 2002; Singh et al., 2010; Zhou et al., 2010; Fernández et al., 2012). In general, an export barrier is analyzed without: 1) emphasizing its significance as an implicit impediment; 2) seeking to unveil its nature; and 3) trying to set its limits (Morgan and Katsikeas, 1997). The latter may be the reason for an overlapping between the determinant factors leading to export and its barriers. Consequently, for

some authors “the exogenous determinants of the commitment to export are usually thought as impediments or export barriers” (Gripsrud, 1990, p. 473).

Leonidou (1995, p. 13) widens the range of those impediments and defines export barriers as “any attitudinal, structured, operational obstacle or any other impediment that makes difficult or inhibits the driving force of a firm to initiate, develop or sustain its international activities.” In addition, he sorts export barriers into two basic categories: internal and external barriers. The former represent barriers that arise within the organization and are usually related to the resources or the export marketing strategy of the firm. The latter, external to the firm, are the result of foreign markets or domestic influences (e.g., a lack of adequate domestic incentives). In the same vein, Bauerschmidt et al. (1985) consider that the perceptions of potential barriers to export include some underlying dimensions that Westhead et al. (2002) frame into four basic categories: strategic obstacles, information barriers, processing obstacles and operational impediments.

The studies on exports have tried to combine the research on export barriers with other aspects related to organizational matters and competitiveness without developing a theoretical framework to the study of the impediments to exports (Morgan and Katsikeas, 1997; Arteaga and Fernández, 2010). In that sense, most researchers who have analyzed the export activity tend, to agree that it is crucial to understand the barriers and their influence on exporting activity at both a macroeconomic and a microeconomic level (e.g. Julian and Ahmed, 2005).

The review shows that the empirical studies that have tried to describe the underlying dimensions of export barriers follow a methodology which is largely used for exploration purposes only. All of these studies have had the objective of reducing the dimensions of the measurement scale and, as a result, to yield a number of few barriers that summarize the broad number of obstacles to exports (Bauerschmidt et al., 1985; Sharkey et al., 1989; Ramaswami and Yang, 1990; Gripsrud, 1990; Yang et al., 1992; Morgan and Katsikeas, 1997; Westhead et al., 2002; Arteaga and Fernández, 2010; Bruneckiene and Paltanaviciene, 2012). However, there is no consensus with respect to the number of underlying factors and its contents which may be motivated for the use of different barriers and its lack of conclusive integration from previous studies (Uner et al., 2013).

Consequently, there is neither a homogeneous number of existing barriers and types nor a uniform criterion of relative importance on which are more significant, typology and scales to embrace them. As an example of these heterogeneous results Schroath and Korth (1989) obtained in their empirical study a total of 211 barriers which finally sorted into 9 types while other studies identified 10 barriers (Rabino, 1980) or 5 factors from the 17 barriers identified by Bauerschmidt et al. (1985) in their theoretical review in addition to the 5 groups yielded by the 20 barriers considered by Kedia and Chhokar (1986), the 3 factors from 10 possible barriers identified by Gripsrud (1990), the 9 factors obtained from the 22 barriers used by Leonidou (1995) or the 8 final factors described by Da Silva (2001) from an initial list of 30 other barriers or the 6 factors obtained by Julian and Ahmed (2005) from 23 barriers. It may be argued also that the proper identification of an export barrier is not only a result of a researcher’s assessment but it may be industry and country-specific (Serra et al., 2012).

In this way, in the existing literature on obstacles to exporting, we find that most studies acknowledge the existence of a relationship between the perception of exporting barriers and the development of the export activity, and according to Rocha et al. (2008), the need to understand the nature and role played by the perception of barriers to exporting has likewise inspired a great number of researchers. Nevertheless, due to the non-existence of a comprehensive base that classifies the main exporting problems of SMEs, there is still a gap in the research of barriers to exporting (Pinho and Martins, 2010).

1.1 Export destination

Generally speaking, companies first invest in developed countries and they prefer close markets and cultures similar to the one in their country of origin. In this way, similar researches have highlighted the fact that companies invest in countries where they have a higher confidence, usually acquired through already established contacts and previous visits. In this sense, the Uppsala Model (Johanson & Wiedersheim-Paul, 1975; Johanson & Vahlne, 1977; Vahlne & Nördstrom, 1993) establishes that companies first develop in their country of origin, presenting the internationalization process as a consequence of a series of incremental decisions (Johanson & Wiedersheim-Paul, 1975), which are mainly affected by two factors: information and resources. These two factors have an effect on the selection of the target countries, the products and the activities taken abroad, as well as the mode of entry.

The lack of information and resources creates uncertainty, a fact which promotes companies to dosify the risk taken in every decision (Wrage, 2016). As a consequence, during the first stages of internationalization, companies must choose those markets in which they have a higher grade of information, culturally closer countries, therefore excluding any element which can become a source of ambiguity or risk. In this sense, a

company's first steps will be directed towards psychologically closer markets since they can be considered extensions of the domestic market, therefore implying a small need for adjustment in the operations, systems and processes (Johanson & Wiedersheim-Paul, 1975; Hadley & Wilson, 2003).

In addition, the literature on exporting activity has highlighted that the export destination is associated to the perception of the export barriers (Leonidou, 1995). However, in line with Gripsrud's (1990) observation, most of the studies on export barriers have not specified the export destination. As a result, he argues that "the results obtained are [solely] an average of the perceived obstacles in different countries" (Gripsrud, 1990, p. 476; emphasis added).

In support of this view, Bodur (1986) found significant differences in the perception of obstacles among the firms that export to Europe or the Middle East. Only a few barriers were the same for both groups of firms but even in this case, these barriers were perceived with a distinct intensity. Finally, Da Silva (2001) being aware of the possible influence of the geographic destination of exports on barrier perceptions, limited his study to firms that exported to a common market like Mercosur. Consequently, from the literature review is possible to propose the following working hypothesis:

H: The relative importance attributed to the different export barriers varies as a function of the firm's export destination.

2 Methodology

2.1 Unit of Analysis

To attain the empirical objectives sought by this study, a specified population of small and mid-size firms has been selected. On the one hand, the internationalization process follows a strategic sequence for approaching foreign markets which is fitted by small and mid-size firms at the beginning of their international business operations (Young, 1987). In this process, exporting represent one of the first steps and, in consistency with the postulates of the Scandinavian school, a compulsory one for small and mid-size firms (Serra et al., 2012; Martin and Drogendijk, 2014).

On the other hand, in Spain, the small and mid-size firms make up 99.9 percent of the total firms and generate 64 percent of total sales although only 44 percent of the total export volume. In addition, 95.7 percent of the large Spanish firms carry over export activities while this percentage decreases to 30.7 percent among the firms with less than 20 employees (Ortega and González, 2000). Therefore, it is possible to state that the difference in the export activity of these small and mid-size firms may be due to the higher intensity of their export barrier perceptions.

The unit of analysis of this study is represented by non-consolidated Spanish exporting firms and non-exporting firms interested in exporting and that participated in the program PIPE. This is a program that aims to facilitate the internationalization process of Spanish firms and, more specifically, to foster and develop the stages of promotion and commercialization of non-exporting small and mid-size Spanish firms –with interest in exporting, and non-consolidated export firms.

A self-administered questionnaire was mailed to all the firms in the census as the measurement instrument to gather the information. The questionnaire mailed to the firms was carefully prepared and the instrument tested in advance to its submission on the basis of recommendations pointed out by Ortega Martínez (1990) regarding brevity, easiness, relevance and preciseness.

Out of a total of 2,590 firms to which the questionnaires were mailed, 478 firms participated in the study for a response rate of 18.5 percent which permits to assume an error of 4.22 percent. However, the real response rate was 18 percent once 15 questionnaires received were eliminated because of no accurately and fully responding basic questions of the survey were not responded by the targeted addressee or were judged as non-reliable answers. The final sampling error was 4.5 percent.

2.2 Scaling and Statistical Analysis

A final list of 26 variables were identified after reviewing the existing literature on export barriers, and analyzing results obtained from interviews during the pretest stage in accordance with the methodology developed by different authors (e.g., Gripsrud, 1990). With this purpose items 1 through 26 of the measurement instrument listing export barriers were shown to decision makers responsible for the exporting activity of their firms during interviews. Specifically, they were asked to react to whether or not and in which extent the different export barriers made more difficult the initiation or expansion of the exports of their firms.

On the one hand, with the purpose of reducing the dimensionality of the scale used in the questionnaire to measure the set of possible export barriers, and at the same time to facilitate the analysis and interpretation of the data with the lowest possible loss of information, the principal components analysis approach is used with Varimax rotated factors. Furthermore, the approach is used to reduce the dimensionality of each of the scales associated to the four types of barriers identified in the literature. More importantly, it has been aimed to assess the validity of these scales.

On the other hand, in order to ensure the sound measurement an analysis of the reliability of the scales and a validity test were performed. Specifically, a reliability test (George and Mallery, 1995; Babbie, 1995) and a content validity test (Venkatraman and Grant, 1986; Babbie, 1995) were used.

To contrast the hypothesis associated to the possible differences in export barriers perceived in function of the destination markets, a one-way analysis of variance was also performed. The Tukey T method (1953) and the Scheffé S method (1953) were implemented as well as a posteriori multiple comparison procedures to investigate which categories presented significant differences.

Finally, to identify and describe the export barriers perceived more often by the Spanish firms participating in the study as a function of the main destination of their exports, absolute and relative frequencies were determined as well as some statistics which included measures of central tendency (i.e., mean, median and mode) and dispersion (standard deviation and quartile deviation). Clearly, to consider export firms to each geographic destination, the analysis was limited to those firms that concentrated more than 50 percent of their total exports to the four geographic destinations indicated: Latin America, European Union, Africa and the rest of the world.

4 Discussion of Results

The factor analysis and principal components approach for dimensionality reduction applied initially to 26 variables associated to the measurement scale of export barriers through Varimax rotation produced seven factors that yielded a total variance of 59.1 percent. Two items, transportation and shipping cost and cost of product adaptation to export markets had low factor loadings; therefore, they were eliminated from the initial list of variables. A repetition of the entire process yielded, however, a higher variance explanation of 60.1 percent for the seven composite factors, and this was the final model accepted to support the empirical results of this study. The decision to accept the final model is indeed supported by a Cronbach's Coefficient Alpha of 0.87 which is considered very good as a rule of thumb for internal consistency in the structural model when is higher than 0.8 for the role played by the seven identified independent composite factors. In addition the results of the KMO test is 0.85 and the spherical Barlett of 3,262.37 (d. f. = 276; p-value = 0.000), altogether permit to reject the hypothesis that the matrix of correlations considered for the tests is the identity matrix.

Regarding the results, first of all, those firms that had more than 50 percent of their exports sent to Africa showed significant differences with those that assigned more than half of their foreign sales to Latin America and the rest of the world. Consequently, after analyzing the mean values obtained for those geographic markets in this type of barriers, it is clear that the firms, whose exports have in Africa their main destination market, perceive higher private support and logistics barriers than the firms that assign their exports to the rest of the world.

Secondly, significant differences are observed between the firms that export mainly to Latin America and those that export to Africa; indeed, the firms that have Latin America as their primary destination market perceive with less intensity the barriers related to private support and logistics than those exporting mainly to Africa.

On the other hand, the study aimed at identifying the barriers that make the hardest the initiation or the expansion of the exporting activity with respect to the destination market. Specifically, the analysis of frequencies and the descriptive statistics calculated for each of the 26 items included in the questionnaire led to the following observations:

- Knowledge barriers and market adaptation barriers are the highest export barriers. In particular, the identification of an appropriate distributor, the selection of the right channels of distribution and the intensity of competition in the export markets are the main components of the market adaptation factor. In effect, these components are the ones that offer the highest difficulty to Spanish firms that have as main market destination any country within the European Union.
- From the mean values for geographic destination it is hard to notice the differences. These fall in a range that include firms that export to Latin America (mean = 4.04, on a 7 scale) and to the European Union (mean = 3.91).

- When the main destination market of Spanish exports is a country within the European Union, it is significant to observe that the tariff barriers had a score similar to the scores obtained for other destination markets such as Latin America, Africa and the rest of the world. This is paradoxical since one of the fundamental pillars of the European Economic Community since the Treaty of Rome –its founding charter, is precisely the free movement of goods and the creation of a common European space. It was the reason of a customs union which, beyond a simple free trade area, was established in 1993 to create a unique European market whose basic goal is to facilitate the free movement of goods and, as a result, the elimination of any tariff and non-tariff barriers that hinder or disturb this freedom.
- Similarly, the so-called risk barrier of losing money through a sale abroad is significantly perceived lower in Latin America (mean = 3.80) than in the European Union (mean = 3.29), rest of the world (mean = 3.38) and Africa (mean = 3.46).
- In addition, when currency risk is considered as an export barrier because of fluctuations in the rates of the foreign exchange market, Latin America's score (mean = 3.53) is significantly higher than those of the other three possible destination markets. This result is consistent with the one previously discussed above which, in conjunction with the barrier identified as high value of the Euro, represents a lower obstacle when Latin America is the destination market of Spanish exports as compared to those in Africa, the rest of the world and the European Union (mean = 3.26). In effect, being the Euro the common currency of the European Union, the European firms, and the Spanish included, are in a situation of high intensive competition among them that influences their pricing strategies, and makes the competition even tougher and, as suggested above, translates into a higher perceived export barrier.
- Finally, the lowest perceived export barrier by managers responsible for the export activity of Spanish firms is transportation and shipping costs when Latin America is the destination market. This finding is significant because, at first glance, it seems to be spurious when it is contrasted with the scores obtained for the other destination markets and in whose cases it was perceived among the top ten barriers to Spanish exports. The second lowest perceived barrier is the lack of personnel specialized in international trade at the banks with which the managers of exporting firms were dealing. In addition, it is noticed that these managers perceive in fourth place the lack of a network in the same banks with which they work in Spain. The latter may be due to the spectacular growth of Spanish investment abroad in the 1990s -about half of this investment is destined to Latin America; and near 18 percent of the total is in financial intermediation, banking and insurance (Arteaga et al., 2007) which may explain why this barrier is perceived lower for Latin America with respect to other destination markets.

5 Conclusion

This study has sought to investigate the perceptions that managers of Spanish firms have with respect to export barriers of destination markets that include Latin America, the European Union, Africa, and the rest of the world. While the focus of the research was the case of Latin American countries as recipients of Spanish exports, some comparison analysis with other regions of the world are included as well.

One of the striking results obtained from this study refers to the case of the significant role played by the support and logistics provided by the private sector. Specifically, it was found that those firms that had more than 50 percent of their exports sent to Africa showed significant differences with those that assigned more than half of their foreign sales to Latin America and the rest of the world. Indeed, the firms that have Latin America as their primary destination market perceive with less intensity the barriers related to private support and logistics than those exporting mainly to Africa.

More importantly, the following results deserve special consideration: First, knowledge barriers and market adaptation barriers are the highest export barriers perceived by Spanish firms. It was pointed out that the identification of an appropriate distributor, the selection of the right channels of distribution and the intensity of competition in the export markets are the main components of the market adaptation factor. Second, when the main destination market of Spanish exports is a country within the European Union, then the tariff barriers had a score similar to the scores obtained for other destination markets such as Latin America, Africa and the rest of the world. Clearly, this result is at odds with the goals of the European Union. Third, the intensity of competition in the foreign markets for the Spanish firms is not among the five most perceived barriers when the destination market is Latin America. Fourth, the so-called risk barrier of losing money through a sale abroad is significantly perceived lower in Latin America than in the European Union, the rest of the world and Africa. Fifth, currency

risk is considered an export barrier because of fluctuations in the rates of the foreign exchange market. For the case of Latin America this barrier is significantly higher than the ones found in the other destination markets. Sixth, the lowest perceived export barrier by managers responsible for the export activity of Spanish firms is transportation and shipping costs when Latin America is the destination market. This result seems spurious because the literature has always considered geographic distance as a major export barrier. However, it can be argued, on the one hand, that with the advances in the field of communications and in the systems of transportation available around the world, then the costs associated with geographic distance have declined substantially. On the other hand, there is evidence that, because of the global economy, the psychological distance concept has replaced physical distance as a barrier in the minds of practitioners and researchers alike (Zaheer, Schomaker and Nachum, 2012; Martin & Drogendijk, 2014).

Nonetheless, the findings of this study need to be interpreted with caution within its appropriate context to suggest both limitations and new directions for further research. Specifically, the ending sample of a relatively high population of Spanish firms was not too big (however, it has one of the highest response level on this kind of surveys) and, therefore, any attempt to replicate the study might produce a different pattern of factor loadings. Similarly, even if the findings are replicated, it may be that the differences are due to the varying responses of export managers or the way they interpret and perceive export barriers rather than the subject content.

In the last analysis, it can be safely stated that this study has positively contributed to shed light on an important topic of research at different levels. First, most of the studies on export barriers cover mainly the cases of a few customary countries like the U.S. and the U.K. Few studies have been undertaken in the past as an attempt to understand the case of Spanish exporting firms, particularly vis-à-vis Latin America and other destination markets. And this is significant at a moment when the direct investment of large Spanish corporations in Latin America may be either in competition or complimentary in the same region with the exports generated by small and mid-size firms from Spain. If this is the case, new avenues are open for empirical research as well as implications for export management and policy-making. Finally, it may be pointed out that a study on export barriers focused on destination markets is useful for contrasting from the other side of the same fence the extensive literature in international marketing on the “made in country” concept to determine whether or not the latter contributes to overcome the former.

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Annex

Table 1 Proposed scale for the Export Barriers

<p style="text-align: center;"><u>Knowledge Barriers</u></p> <ul style="list-style-type: none"> • Lack of knowledge of potential export markets • Lack of staff for export planning • Ignorance of the financial and non-financial benefits that exporting can generate • General lack of knowledge of how to export • Lack of knowledge of export assistance programs • Lack of information about opportunities for your products/services abroad 	<p style="text-align: center;"><u>Procedure barriers</u></p> <ul style="list-style-type: none"> • Transportation costs and shipping arrangements • Documentation and red tape required for the export operation • Language differences • Cultural differences • Tariff barriers to exports • Non-tariff barriers related to the standardization and homologation of the product, or health, phytosanitary or similar barriers • Differences in product usages in foreign markets • Cost of adapting the product to the foreign market • Locating a suitable distributor or distribution channels • Logistical difficulties
<p style="text-align: center;"><u>Resources Barriers</u></p> <ul style="list-style-type: none"> • High financial cost of the means of payment used in international operations • Lack of resources to face the period of time needed to recover export-related investments • Lack of local banks with adequate international expertise • Insufficient production capacity in your firm • Inadequate foreign network of the banks you work with 	<p style="text-align: center;"><u>Exogenous Barriers</u></p> <ul style="list-style-type: none"> • High value of the euro • Strong overseas competition • Risk from variation of the exchange rates • Risk of losing money by selling abroad • Political instability in the destination country

Source: Own elaboration, adapted from Arteaga-Ortiz y Fernández-Ortiz (2010:404)

*POLISH ECONOMY INNOVATION ON THE BACKGROUND OF THE
EUROPEAN UNION AND RESEARCH & DEVELOPMENT ACTIVITY
FINANCING IN 2008-2014*

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Abstract

Purpose of the article: Firms in pursuit of winning and maintaining the competitive position on both domestic and foreign markets must use the advantage created by innovation. The implementation of innovation by firms brings about a variety of benefits, i.e. the use of new technologies, the expansion of markets, the final decrease of operating costs, and the ability to meet customer needs. However, for the innovation implementation process to start, it is necessary to incur expenditures.

Methodology/methods: This paper attempts to join the stream of studies on the Polish economy innovation on the background of the European Union, with the special focus on expenditures for the R&D activity, which is not directly associated with the creation of specific innovation, but constituting its significant component.

Scientific aim: The considerations in this paper were based on the literature of the subject and secondary data from the Central Statistical Office of Poland and Eurostat.

Findings: Collecting and analyzing of innovation activities data are particularly important to create, implement and monitor strategies, as well as research the issue of economic entities development.

Conclusions: Data presented in the article clearly confirm that expenditures on R&D in Poland are among the lowest in Europe. A major problem in this regard seems to be relatively low involvement of business in R&D expenses. Despite this one can point the so-called good practices, confirming the effectiveness of these expenditures, expressed in constructing innovative solutions conquering both the domestic market, as well as foreign ones.

Keywords: innovation, research & development expenditures, Summary Innovation Index.

JEL Classification: O310, O320.

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Introduction

Innovation is one of the most important factors, which in times of globalization and increasing market competition determine the further development of firms, country economies and the whole world. The studies being conducted in order to identify differences in the level of innovation of firms and countries indicate that innovative activity significantly affects the condition of business entities and in result the condition of entire economies, becoming the key determinant of development prospects of a given country.

Beside innovation and human capital, one of the major pillars of modern knowledge-based economies development is research and development activity, with expenditures for this activity as one of its important measures (Piersiala, 2014). Given the above, this paper undertakes the subject of Polish economy innovation, including the context of its position on innovation „map” of the European Union countries, with particular focus on the R&D activity expenditures.

Innovation is associated with such concepts as novelty, rationalization, improvement, enhancement, invention (Krawczyk-Sokołowska, 2012). It is acknowledged that innovation is not a one-time phenomenon, but a long and complex process involving many decisions made on the organizational level of the unit, starting with the innovation generation and ending with its implementation (Urabe et al., 1988; Trzepizur, Wielgórka, 2014). However the most common and used in practice definition is the one included in Oslo Manual (Oslo Manual, 2005), according to which „an innovation is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations”. The innovation process is related to expenditures incurred on research & development activity. They provide some idea of the scale and potential of economies development, as without research & development, and therefore without spending financial resources, it is difficult to say about development potential of business entities and economies (Małkus, Sołtysik eds., 2013).

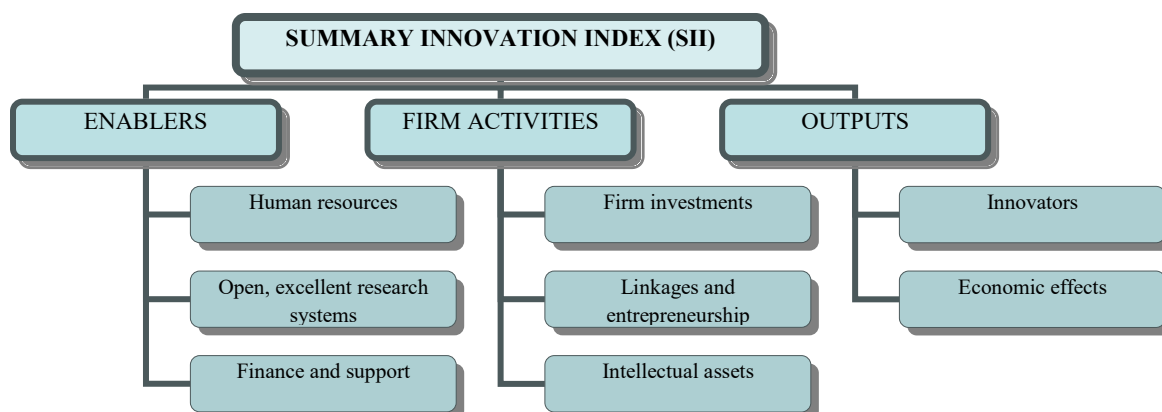
1 Innovative position of Poland on the background of the European Union

Innovation determines the competitive position of the economy and is the subject of studies both on national economies level as well as in global perspective. The cyclical researches on innovation activities of enterprises, conducted in accordance with an international methodology presented in Oslo Manual, are the basic source of information included in a scoreboard with results of innovation surveys in which the European Commission collected 25 indicators for monitoring the Innovation Union. In Poland the problem of innovation (among other things) and the presentation of data related to innovative activity of firms are addressed by the Central Statistical Office of Poland (GUS – Główny Urząd Statystyczny). Meeting the increasing need for data collection of Polish enterprises innovativeness and cooperating with Eurostat, the Central Statistical Office of Poland systematically presents results of surveys on innovation activities of Polish enterprises, which were analyzed in the following publication.

The analysis of data presented by GUS indicates that the share of innovative firms in Poland has been systematically decreasing. It is evident both in case of innovative firms in the industry sector (decrease from average 21.40% in period 2006-2008 to 17.50% in 2012-2014), and firms operating in the services sector (from average 16.10% in 2006-2008 to 11.40% in 2012-2014) (GUS, 2010; GUS, 2015).

The innovative standing of the European Union countries has been monitored every year, since 2001, by the European Commission using so-called Innovation Union Scoreboard. The Innovation Union Score-board uses statistics from Eurostat and other internationally recognized sources such as the OECD and the United Nations as available at the time of analysis with the cut-off day by the end of each analyzed year (European Commission and Eurostat, 2015a). Innovation is measured based on the Summary Innovation Index (SII), which takes values between 0 and the maximum value of 1.

The indicators comprising the SII index have been grouped into three main categories: enablers, firm activities and outputs, and then extended into eight dimensions of innovation, including 25 various indicators altogether (Graph 1). Enablers category indicates the main factors enabling the innovation, however remaining outside the control of the firms. This category covers three dimensions of innovation: human resources, open, excellent research systems, and finance and support. Firm activities include all activities in the field of innovation on the firm level, grouped into three areas of innovation: firm investments, linkages and entrepreneurship, and intellectual assets. Outputs comprise of the effects of firms activities in the field of innovation: innovators and economic effects.



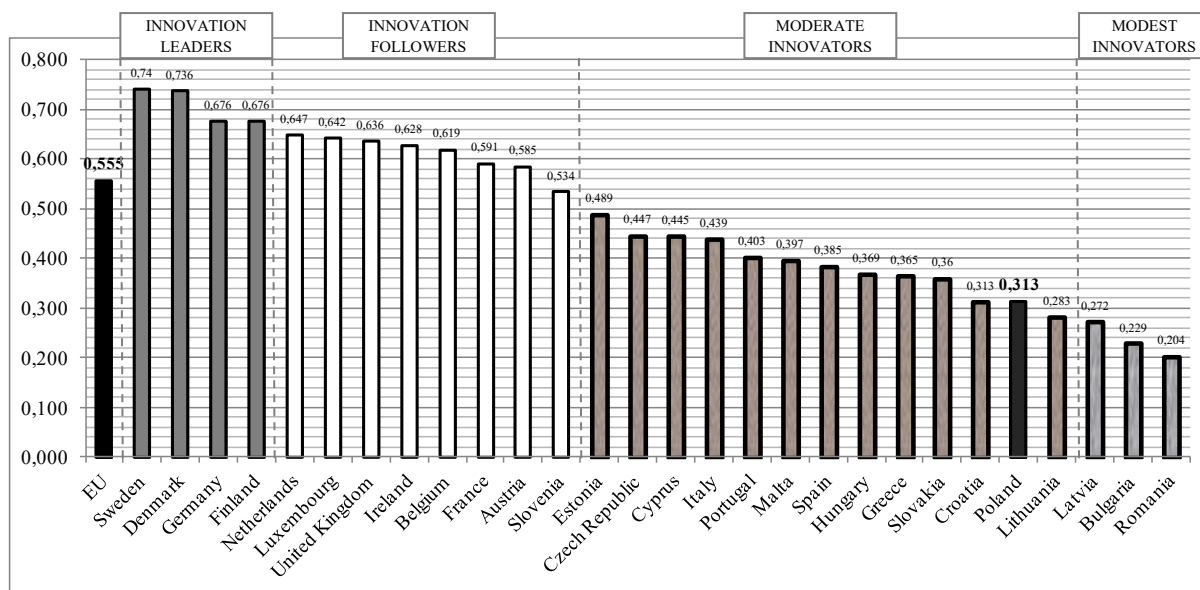
Source: Innovation Union Scoreboard, 2015a.

Graph 1 Composition of the Summary Innovation Index (SII)

Innovation Union Scoreboard, based on the results of the Summary Innovation Index, divides countries into four categories, respectively:

- innovation leaders – countries, where the Summary Innovation Index takes values above 120% of the average index for the European Union countries,
- innovation followers – countries, where the Summary Innovation Index takes values between 90% and 120% of the average index for the European Union countries,
- moderate innovators – countries, where the Summary Innovation Index takes values between 50% and 90% of the average index for the European Union countries,
- modest innovators – countries, where the Summary Innovation Index takes values below 50% of the average index for the European Union countries.

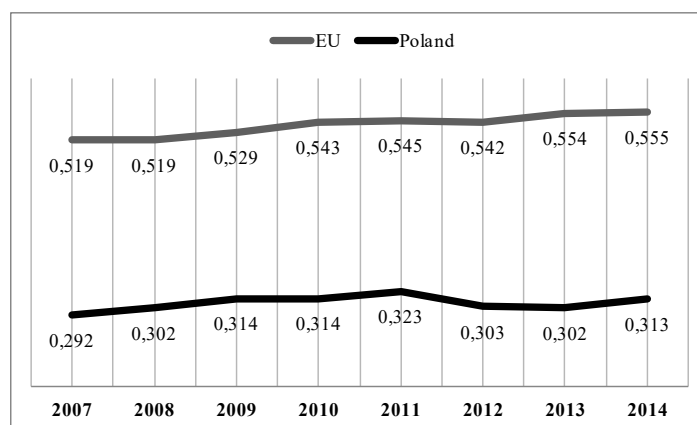
According to the results of the latest report of the European Commission – Innovation Union Scoreboard 2015, given the average innovation index for the European Union in 2014 was 0.555, the group of innovation leaders included Sweden, Denmark, Germany and Finland, with innovation results well above the average mentioned above, which is presented on Figure 1. The Summary Innovation Index for this group of countries fell in the range of 0.676 – 0.74. Member countries with the value of SII index close to the EU average (0.534 – 0.647; the EU average – 0.555) form the group of innovation followers and include the Netherlands, Luxembourg, the United Kingdom, Ireland, Belgium, France, Austria, Slovenia. The third and largest group of moderate innovators incorporates Estonia, the Czech Republic, Cyprus, Italy, Portugal, Malta, Spain, Hungary, Greece, Slovakia, Croatia, Poland and Lithuania, with SII index values in the range of 0.283 – 0.489. Results achieved by Latvia, Bulgaria and Romania fall well below the EU average, making those countries the modest innovators.



Source: own elaboration on the basis: European Commission and Eurostat, 2015a.

Figure 1 EU Member states' performance according to innovation groups

The report indicates that the composition of individual groups remained relatively stable in comparison to the innovation results recorded in the previous year. The countries that moved to another group, in this case from innovation followers to moderate innovators, were Cyprus and Estonia. The innovative countries achieved the best results in all dimensions measured by the Summary Innovation Index: starting with research & development expenditures, through firm activities for innovation, and ending with innovation results and economic effects, which suggest a stable system of research & development continuing for many years (European Commission and Eurostat, 2015b). In case of innovation leaders (Sweden, Denmark, Germany, and Finland) there are the smallest differences for all eight dimensions of innovation – the results are similar (the difference in SII index value between the best in 2014 – Sweden, and the last in the group Germany and Finland – both with the same value of SII index – was only 0.064). Innovation leaders also achieve results well above the EU average, and it is the trend that has remained unchanged for many years.



Source: own elaboration on the basis: European Commission and Eurostat, 2015a.

Figure 2 Summary Innovation Index (SII) for EU and Poland in years 2007-2014

The analysis of the innovation results, published in previous years by Eurostat and the European Commission, identifies Poland as a country categorized into the group of moderate innovators. Figure 2 reveals that the Summary Innovation Index for Poland in 2014 equaled 56.4% of the average index for the EU countries, which again resulted in placing Poland among the moderate innovators, in the last but one place, on a par with

Croatia. According to the data presented in the Innovation Union Scoreboard 2015 report, the indicator for Poland amounted to: 56.26% (2007), 58.19% (2008), 59.36% (2009), 57.83% (2010), 59.27% (2011), 55.90% (2012), 54.51% (2013) of the average indicator for 28 EU member countries. However it should be noticed, that the greatest span between SII index results can be observed in the very moderate innovators group, with the difference between the first country in this group – Estonia – and the last Latvia, being 0.206.

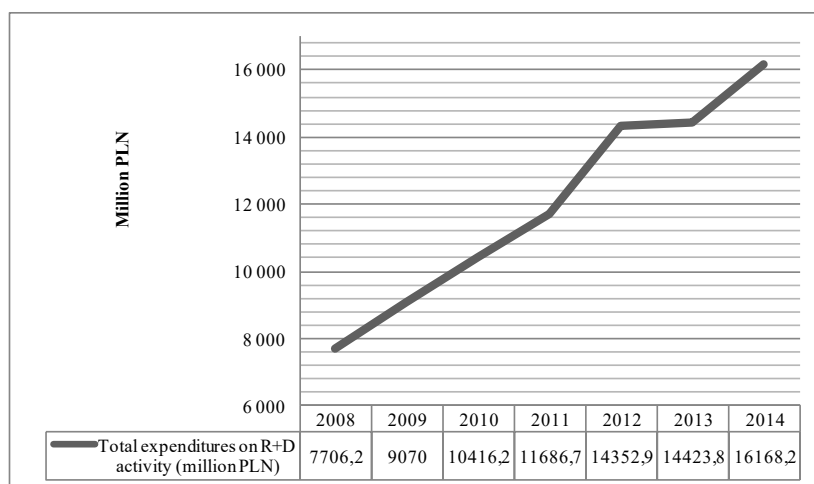
The analysis of indicators which constitutes the SII index suggest that Poland falls below the average for the EU countries. The weaknesses of Poland include, i.e.: the share of foreign doctoral students from outside the European Union, the number of patent applications from the field of social changes/challenges, firm expenditures for R&D, revenues from licenses and patents sold abroad, or newly assigned doctoral titles.

The results presented by Eurostat in the form of the Innovation Union Scoreboard do not clearly indicate one source of innovation advantage of existing leader countries, however allow to draw some conclusions regarding the whole of achieved success. There can be observed a significant importance of economic activity of firms, and strong links between business enterprise and higher education sectors. Also important is the commercialization of new technologies and resulting financial power in the form of revenues from licenses and patents (Nowak, 2012). However, the strongest emphasis should be put on the need to increase firm expenditures on research & development, as for the most of innovation leaders this activity constituted (and it should be presumed it will still constitute) the basis for a sustainable system of research and innovation and for the development of such a great innovation advantage over other European Union countries. Given the above the remaining part of the paper focuses on the analysis of the issue of research & development activity in Poland as well as its perspectives in the area of positive effects of increasing this activity.

2 Research & development activity in Poland – analysis of internal expenditures in 2008-2014

According to GUS definition, research & development activity means systematically conducted creative works, undertaken in order to increase knowledge, including knowledge of man, culture, and society, as well as to discover new uses for this knowledge. R&D activity includes three types of studies, i.e. basic studies, applied studies, and development works.

In 2008-2014 the value of total internal expenditures for R&D activity varied between PLN 7,706.2 million in 2008 and PLN 16,168.2 million in 2014 (Figure 3), which represents the increase of 109.81%. When analyzing data on expenditures, it should be noticed that they systematically increased from year to year, with the greatest increase over the previous year (by 22.81%) occurring in 2012.



Source: own elaboration on the basis of GUS, 2016.

Figure 3 Total internal expenditures on R+D activity in years 2008-2014

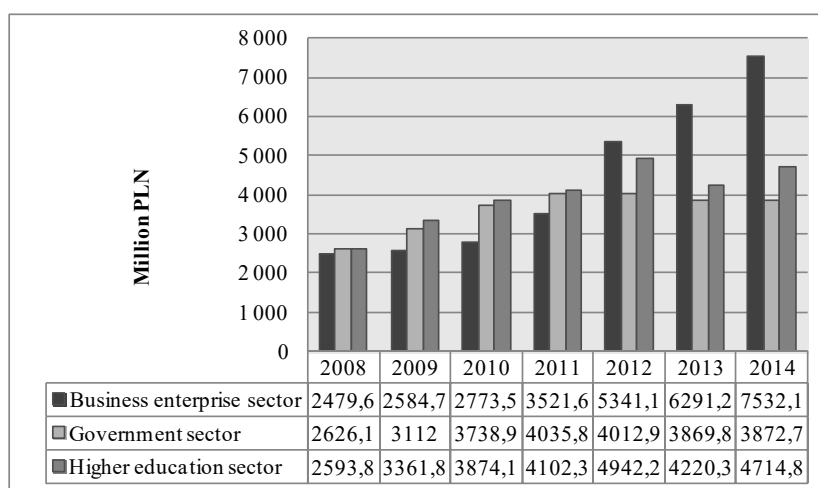
The trends mentioned above are also partially reflected by the formation of R&D expenditures per capita and per R&D sector employee (Table 1). Although it cannot be claimed that they increase systematically from year to year, but comparing data from 2014 and 2008 it should be noticed that expenditures per capita increased by 107.76% and per 1 R&D sector employee increased by 63.51%.

Table 1 R+D expenditures per capita and per employee in R+D in years 2008-2014

R+D expenditures	2008	2009	2010	2011	2012	2013	2014
Per capita (PLN)	202,2	237,7	270,4	303,3	372,5	374,6	420,1
Growth rate (previous year = 100%)		17,56%	13,76%	12,17%	22,82%	0,56%	12,15%
Per employee in R+D (Thousand PLN)	64,4	75,0	80,3	86,9	102,8	99,0	105,3
Growth rate (previous year = 100%)		16,46%	7,07%	8,22%	18,30%	-3,70%	6,36%

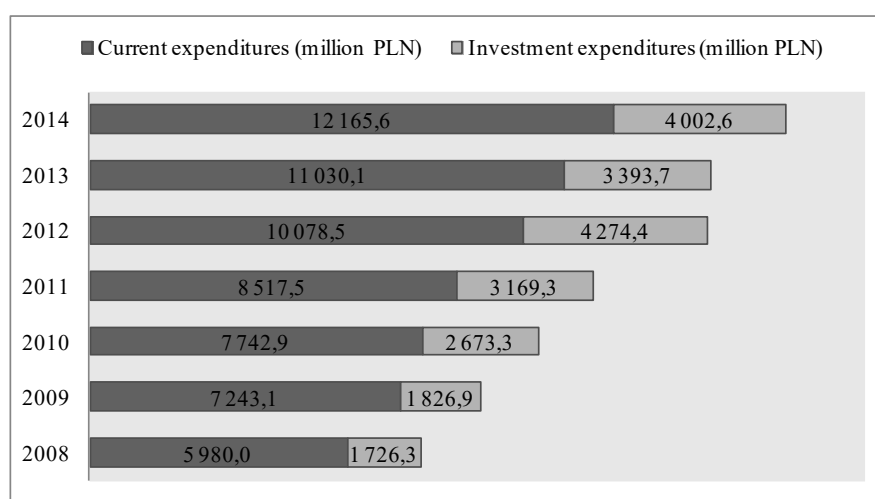
Source: own elaboration on the basis of GUS, 2016.

When analyzing data from institutional sectors (Figure 4), it should be noted that while up to 2011 there was a slight dominance of expenditures in higher education sector, with comparable expenditures in business enterprise and government sectors, then since 2012 a systematic increase of value and share of expenditures in business enterprise sector started. Thus, in 2014 they amounted to PLN 7,532.1 million, which was equal to 46.59% of total expenditures and represented an increase of 203.76% in comparison to 2008 expenditures (19.72% in comparison to 2013). At the same time, in each of the studied years, the share of expenditures of the fourth sector, i.e. private non-profit institutions sector, amounted to less than 0.5% of total expenditures.



Source: own elaboration on the basis of GUS, 2016.

Figure 4 R+D expenditures according to sectors in years 2008-2014

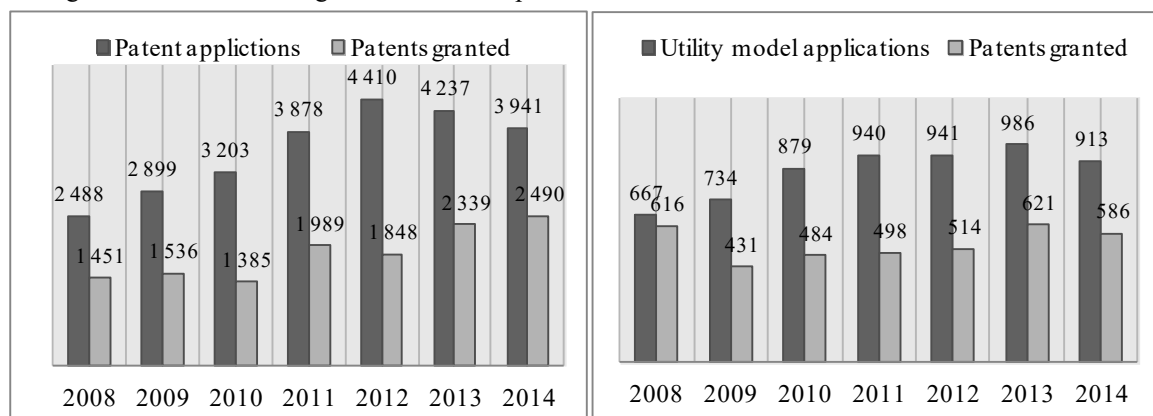


Source: own elaboration on the basis of GUS, 2016.

Figure 5 R+D expenditures according to categories in years 2008-2014

According to the systematics adopted by GUS the internal R&D expenditures represent expenditures incurred in the reporting year for R&D works performed in the reporting entity, regardless the source of the funds. They include current expenditures and investment expenditures for fixed assets related to R&D activity (Figure 5). Current expenditures amounted to about 70% of total expenditures in 2010-2012, while in other years their share was about 80%. Expenditures from that category increased from year to year, resulting in an increase of 103.44% in 2014 in comparison to 2008 and of 10.29% when comparing to data from 2013. In contrast to current expenditures there was a systematic and more dynamic increase in investment expenditures (representing about 20% to 30% of total expenditures). Their increase in 2014 accounted to 131.87% in comparison to 2008 and 17.94% when comparing to data from 2013. It should be noted that the highest increase rate in comparison to previous year (of 46.33%) was observed in 2010, while in 2013 (the only one in the analyzed period) there was a decrease in comparison to previous year by 20.60%. In 2013 (in comparison to 2012) current expenditures emerged 9.14% higher, which resulted in the increase of the total expenditures by 0.49%.

It is obvious that increasing research & development expenditures should result in increased innovation of firms and the entire economy, including that measured by the inventiveness level. Calculated Pearson's linear correlation coefficients combining R&D expenditures with the number of reported inventions, utility models, or patents granted indicate a strong linear relationship between combined variables.



Source: own elaboration on the basis of GUS, 2016.

Figure 6 Patent and utility model applications versus patents granted in years 2008-2014

Consequently, the increase in R&D expenditures is reflected in the number of reported inventions, utility models and patents granted, however it is impossible to indicate a clear trend in any of the studied years (Figure 6). While in 2014 in comparison to 2008 the Patent Office of the Republic of Poland was reported with 58.40% more inventions and 36.88% more utility models, in 2012 the number of reported inventions was the highest and decreased in the following years. The most patents (in case of inventions) were granted in 2014, but it is not the case to speak about their systematic increase from year to year.

The increasing R&D expenditures in consequent years were also not accompanied by the consistent increase in patents granted in case of utility models: in 2014 there were 4.87% less patents granted in comparison to 2008 (despite there were 36.88% more applications).

The measure used in analyses of economies innovation is also the intensity of R&D works – expressed with the share of R&D expenditures (GERD) in GDP. In 2013 the ratio of GERD to GDP for Poland accounted for 0.87%, which against 0.60% in 2008 represents an increase of 45%. In the corresponding period this ratio for the EU countries was 2.01% (2013) and 1.85% (2008), respectively. Despite the systematic increase of the share of research & development expenditures in Polish GDP, in each of the studied years there is a visible formation of GERD / GDP ratio well below the EU average (the European Commission and Eurostat, 2016).

In conclusion it can be said that Poland achieves a satisfactory increase rate of R&D activity expenditures (including that measured by GERD / GDP ratio). At the same time it should be noted that those expenditures are at a relatively much lower level than the EU average and that positive changes are largely associated with the increase in public expenditures for R&D sector. Therefore, in comparison to the EU countries, R&D expenditures are characterized with slightly different structure and, most of all, relatively low share of private expenditures.

Conclusion

As it is shown in the above considerations Poland, together with Croatia and Lithuania, in 2014 falls in the end of moderate innovators group, with the result well below the EU average (Figure 1). Therefore it is classified into the group of countries with the innovation level negatively deviating from the average calculated for 28 European Union countries (Figure 2). However, it should be noted that there is a stable trend, and the results of innovation measurement for Poland in 2014, after a slight decrease in 2012 and 2013, again show an upward trend, with values similar to 2009 and following years. This confirms that there are actions undertaken in Poland in order to increase its innovation and that those actions bring about positive results.

By focusing on a variety of improvements and new products, companies can achieve a number of economic benefits, including primarily remaining on the market and competing with other sub-entities. Despite the significant underdevelopment and unfavorable positions in innovation rankings, the gap between development level in Poland and the EU average is slowly, but surely decreasing. The expenditures incurred, and resulting dynamic development of certain industries (ia. IT, medical engineering, electronics, and robotics) make Poland provide products that are conquering the global market. Confirmation for this can be, for example: mouse box (a combination of a mouse and a computer), HSMG - High Strength Metallurgical Graphene, method of recycling silicon from photovoltaic cells, metal parcel machines, exoskeleton for arm rehabilitation - robotic arm, games for smartphones and tablets (Bubel, Ostraszewska, Turek, Tylec, 2015). It seems to be obvious that the size of expenditures spent on research and development and financial support for innovative ideas are reflected in the level of innovation of enterprises and economies. It should be emphasized, however, that they are not their only determinant, often because innovation policy is a phenomenon of developing countries, which are looking for sources of competitive advantage in this case not only in material resources, but in the quality of human resources rather. These - only a few - examples confirm that also Poland, despite the unfavorable position in the innovation rankings and relatively low expenditures on R&D has the potential for innovation, which with appropriate further financial support and organization can result in constant development reflected by products successively conquering global markets.

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*INFLUENCE OF COOPERATION AND FUNDING ON INNOVATIVE
CAPACITY IN MANUFACTURING FIRMS – ESTONIA AND LITHUANIA
COMPARATIVE CASE STUDY*

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Abstract

Purpose of the article The aim of this paper is to determine what the impact of different funding sources and cooperative relationships on innovation activities of manufacturing companies in Lithuania and Estonia is, and makes international comparisons, respectively. We expect that the impact of selected determinants (by itself) will be weaker than when the determinants act in combination with each other.

Methodology/methods Using survey of innovation activities in enterprises – Community Innovation Survey from 2010-2012 were analysed relationship between % of turnover in new or improved products introduced (new to the market; R&D expenditures dependent variable) and selected determinants of innovation activities (cooperation, type of innovation, financing source, enterprise and subsidiaries; independent variables) by using own multiple linear regression models.

Scientific aims Revealing of variables combination with the greatest effect on innovation activities leading to the innovations creation is the second part of the goal.

Findings We confirmed the impact of various financing sources. We conclude that public support achieved the greater effect only if it is well targeted; it is the individual support of the selected type of innovation. Positive effect can be further increased if the cooperation (targeted on creation of innovation) is supported by public funds. Likewise we show that cooperation may have a greater positive effect if it occurs during the formation of a certain innovation (and in combination with different entities - typically cooperation within/without universities).

Conclusions An important implication arising from these results is that public policies to encourage the innovations creation should be selective, should be directed to selected sector and cooperation in the creation of a specific innovation have to be the aim. In this case, it is possible to record even the existence of knowledge spill-over effects mostly in knowledge networks.

Keywords: innovation, business, influence, cooperation, funding, manufacturing industry, Estonia, Lithuania

JEL Classification: O11, O19, O32

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Introduction

Innovation or the ability to transform the unique production factors (including knowledge, skills, creativity) are a source of competitive advantage in various industries around the world in the last ten years (Argote & Ingram, 2000). Innovations occur at specific locations and in conditions, which are difficult replicable and transferable to other areas (Becerra, Lunnan & Huemer, 2008). This ensures uniqueness and the competitive advantage arises in the firm, sometimes in geographic area (region) where this factor occurs. Determinant analyses of innovation environment will help to increase the innovative production more efficiency, to help the localized firms in the region to gain their competitive advantage. The results of international comparative studies should contribute to benchmarks that will help to better public policies targeting, strategic management such as industrial and regional policies in countries (Uramova & Koziak, 2008).

New sources of regional competitive advantages are connected with the original (past) sources. The use of new technologies and new production processes enables to produce at a lower cost and faster to get a new product to the customer (Peteraf, 1993). Therefore, the cut-costs and hence the lower price are the source of advantage. New products are also linked to production facilities investments, high-technologies, but also increasingly to new forms of knowledge acquisition (mainly tacit knowledge). It is the substance of the second source of competitive advantage. The third one is the synergistic linkage between the unique production factors and innovation environment, which is often supported by the presence of various subjects and multiplicative elements of cooperation (Persaud, 2005). The creation of internal environment and organizational firm culture are no necessity-condition for the realization of benefits from cooperation (Barney, 1986). The innovative milieu integrates creative and innovative staff and specific firm strategy based on the knowledge. This connection allows increase the innovative outputs production and compete on international market, and also allows increasing the firm innovative capabilities. This applies to firms as well as other partners in cooperation knowledge networks (Dyer 1996), strategic alliances (Baum, Calabrese & Silverman, 2000), technical platforms (Sen & Egelhoff, 2000), industrial clusters (Stejskal & Hajek, 2012) or knowledge acquisitions or mergers (Hagedoorn & Duysters, 2002) that bring new knowledge and external financial resources (Mina, Lahr & Hughes, 2013).

1 Cooperation and Funding as Factors for Innovation Performance Increasing

If firms produce innovative products and services that they are distinguished in the final production markets from the products entered to the market by other producers. In the case of finding the end customer, this allows firms to obtain higher financial performance (Zahra et al., 2000). Higher interconnection of firms' innovation capability and high technologies means a higher rate of investments into modern technologies to prevent them from becoming obsolete. That is why firms often focus on other sources of innovation performance such as internal development supplemented by external network linkage. As a result, technological innovation is critical to a firm acquiring and sustaining competitive advantage and improving its performance in a dynamic environment (Sher & Yang, 2005).

The innovative firm performance depends on both groups of factors - exogenous (for example: technology or knowledge acquisition) and endogenous (such as R&D expenditures, skilled manpower and organizational environment a firm strategy). Also it depends on the firm size, a field (industry) in which firm operates and the availability of financial resources and level of cooperation (and trust). The weaker technological skills (both in technical and bearers of knowledge - different scientific positions) were distinguished in small and medium-sized enterprises. However, if small or medium enterprise wants to be export-oriented, it must increase its potential in production of innovations. The adoption of advanced manufacturing technologies has long been recognized as a key factor in the competitiveness of manufacturing firms, as these technologies allow for increased productivity, improvements in product quality or reductions in product rejection rates, all of which are essential on domestic and foreign markets (Lefebvre & Lefebvre, 2002).

Thin capitalization, difficult access to new knowledge and technologies force small and medium-sized enterprises to turn to commercial agreements and strategic alliances with other domestic and foreign firms (networking) and rely on intermediaries (distributors and manufacturing agents) to enhance their export performance (Sen & Egelhoff, 2000; Lefebvre & Lefebvre, 2002). Vega-Jurado et al. (2009) argue that not only do the firm's internal efforts to create new knowledge encourage the use of external knowledge sources; they also increase the firm's ability to exploit these sources efficiently in the development of new products and processes. Thus, the greater the internal capabilities of the firm, the greater are the effects of the different external knowledge acquisition strategies on innovation performance.

As mentioned above, that SMEs have opportunity to adjust their business strategy and management so that they can make the appropriate knowledge make or buy (Gavurova, 2012). Vega-Jurado et al. (2009) add cooperation network as a new additional knowledge sourcing strategy. The cooperation is regarded as a special form of economic activities organization aimed at the inputs (production factors) exchange and the subsequent value added creation. Collaboration enables individual economic actors to reduce the research and development costs (or the final innovation), further to reduce the level of uncertainty, to use the economies of scale, or to obtain the necessary spectrum of very specific inputs in a very short time. A specific resource that has a positive impact on the individual networked subjects, but also non-networked subjects of knowledge (or cooperative) chain is knowledge spill-over effects (Stejskal & Hajek, 2015a). Some authors emphasize that the cooperative chains can be significantly successful in grant competitions and gain considerable public funds (Veugelers & Cassiman 1999, Becker & Dietz, 2004). However, not all authors agree with the opinion consisting in positive effectiveness of public support (Kuntze & Hornschild, 1995; Beise & Stahl, 1999; Niosi, 2002), some scholars even doubt the stimulatory effect of private R&D spending (González & Pazo, 2008).

There are a few studies that deal with the manufacturing industry and the influence of external cooperation and public resources aimed at increasing innovative performance. Very few of them are aimed at segment of Central and East Europe. Srholec (2014) dealt with the Czech Republic; concretely he focused on cooperation and innovative performance of firms in comparative study comparing the Czech Republic, Norway and the UK. Therefore we know very little about the factors that influence the innovative capability of Czech enterprises in the manufacturing industry. This article has the ambition to contribute to complement of existing knowledge about the determinants of innovation milieu in CEE.

The aim of this paper is to determine what the impact of different funding sources and cooperative relationships on innovation activities of manufacturing companies in Lithuania and Estonia is, and makes international comparisons, respectively. We expect on basis of results published previous studies (Stejskal & Hajek, 2015b; Hajek, Stejskal, 2015) that the impact of selected determinants (by itself) will be weaker than when the determinants act in combination with each other. Revealeation of variables combination with the greatest effect on innovation activities leading to the innovations creation is the second part of the goal.

The remainder of the paper is structured as following. Theoretical background and hypotheses are discussed in the second part. The data methodology, results and their analysis are shown in the part 3. In the last part, there are conclusions and recommendations.

2 Data, Methodology and Results

We use harmonized survey of innovation activities in enterprises - Community Innovation Survey (CIS); for the collection of data. CIS are part of the EU science and technology statistics carried out with two years' frequency by EU member states and number of ESS member countries, organized by Eurostat (the official statistical office of the European Union). Main aim of this research is to provide the EU with statistics that enable comparisons between the European countries and regions. The CIS are designed to provide information on the innovativeness of sectors by type of enterprises, on the different types of innovation and on various aspects of the development of an innovation, e.g. (i) the objectives; (ii) the sources of information; (iii) the public funding; (iv) the innovation expenditures (Eurostat, 2016).

There are number of studies (based on CIS) analysing innovation activities of firms (e. g. Klingebiel and Rammer, 2014; Negassi and Hung, 2014; Raymond et al., 2015). Therefore, for the purpose of this study, CIS 2010-2012 were used to analyse relationship between % of turnover in new or improved products introduced (during 2010-2012 that were new to the market; TURNMAR; dependent variable) and selected determinants of innovation activities (independent variables) by using own multiple linear regression models. Regression models are commonly used for the similar kind of analyses (e. g. Schneider and Spieth, 2013; Laeven, Levine and Michalopoulos, 2015).

All independent variables (factors) involved in analyses are divided into six groups influencing innovation activities of firms:

1 Cooperation:

- cooperation arrangements on innovation activities (CO)
- co-operation partners (CO_GP - other enterprises within enterprise group; CO_SUP - Suppliers of equipment, materials, components, or software; CO_CUST - clients or customers; CO_COMP - competitors or other enterprises in sector; CO_UNI - universities or other higher education institutions; CO_GOV - government or public research institutes; CO_CON - Consultants and commercial labs)

- 2 Innovation:
 - introduction of new or significantly improved good onto the market (INN_G)
 - introduction of new or significantly improved process (method of production; logistic, delivery or distribution system; supporting activities) onto the market (INN_P)
 - introduction of new or significantly improved service onto the market (INN_S)
- 3 Financing:
 - public funding from local or regional authorities (FUNLOC)
 - public funding from central government (FUNGMT)
 - public financial support from the EU (FUNEU)
- 4 Expenditures in 2012 (% of total turnover)
 - in R&D (intramural – RRDIN; extramural – RRDEX)
 - in acquisition of machinery (RMAC)
 - in acquisition of external knowledge (ROEK)
 - in all other activities (ROTR)
- 5 Enterprise/Subsidiaries:
 - merge with or take over another enterprise (ENMRG)
 - sell, close or outsource some of the tasks or functions of the enterprise (ENOUT)
 - establishment of new subsidiaries in (home country) or in other European countries (ENWEUR)
 - establishment of new subsidiaries outside Europe (ENNWOTH)
- 6 Other:
 - largest market in terms of turnover between 2010-2012: national/other (LARMAR)
 - participation in the group of enterprises (GP)

In total, data on 1,723 Estonian and 2,231 Lithuanian companies with at least 10 employees was obtained (response rate greater than 60 %). For the purpose of this study, we filtered only companies from the manufacturing industries into our data group (specifically, countries covering NACE categories 10-33): 921 Estonian and 906 Lithuanian companies. Our multiple linear regression models have the following general form (Chatterjee and Hadi 2013; Wu et al, 2013):

$$y = \beta_0 + \beta_1x_1 + \beta_2x_2 + \dots + \beta_nx_n + \varepsilon \quad (1)$$

where

y is dependent variable;

$x_1, x_2 \dots x_n$ are independent variables;

ε is an error term accounts for the variability in y which cannot be explained by the linear effect of the n independent variables;

$\beta_1, \beta_2 \dots \beta_n$ called the regression parameters or coefficients, are unknown constants to be determined (estimated) from the data.

Spearman's Coefficient was used to test correlation between variables and to fulfil the first prerequisite and dismiss the possibility of multicollinearity in the models. Generally, Spearman's test measures the strength of the linear relationship between two variables when the values of each variable are rank-ordered from 1 to N, where N represents the number of pairs of values (the N cases of each variable are assigned the integer values from 1 to N inclusive and no two cases share the same value). Difference between ranks for each case is represented by d_i . General formula of the Spearman Rank Correlation Coefficient has following general form (Weinberg and Abramowitz, 2002; Borradaile, 2013):

$$r_s = 1 - [(6 \cdot \sum d_i^2) / (N^3 - N)] \quad (2)$$

Initially, analyses were performed to see, which factors independently affect dependent variable. We show that different variables have direct impact in Estonia and Lithuania (table 1).

Table 1 Variables used in models for Estonia and Lithuania

Estonia			Lithuania		
R = 0,7058; R2 = 0,4982; p-value = 0,0001			R = 0,7141; R2 = 0,5099; p-value = 3,7 E-06		
Variables	p-value	sd	Variables	p-value	sd
RRDIN	0.000***	0.350	RRDIN	0.764	0.177
RRDEX	0.630	1.855	RRDEX	0.705	0.564
RMAC	0.488	0.136	RMAC	0.663	0.085
ROEK	0.328	12.36	ROEK	0.186	1.494
FUNGMT	0.014**	0.110	ROTR	0.917	0.132
INN_P	0.133	0.090	FUNGMT	0.029**	0.128
INN_S	0.402	0.109	FUNEU	0.612	0.090
CO_GP	0.000***	0.154	INN_P	0.010**	0.089
CO_CUST	0.047**	0.137	INN_S	0.576	0.116
CO_COMP	0.249	0.115	INN_G	0.039**	0.117
CO_SUP	0.643	0.083	CO	0.592	0.131
ENNWOTH	0.007***	0.164	CO_UNI	0.191	0.145
GP	0.037**	0.114	CO_GP	0.028**	0.082
-	-	-	CO_CUST	0.427	0.112

Legend: ** significant at P<0.05; *** significant at P<0.01; R = correlation coefficient; R2 = coefficient of determination; sd = standard deviation

Source: own research

The results of our analysis (Table 1) show that financial sources are the most important determinants (local businesses intramural expenditures in R&D, establishment of new subsidiaries outside Europe and self-financing from their national resources in Estonia. The new product – innovated process or service (INN_P and INN_S) – is not a significant determinant of innovative activities (their role increases, combined with other changes-APPLICABLE - see below). Estonian firms use also the cooperation as the source of cost-cuts and source of new knowledge. We confirmed that cooperation partner in product and / or process innovation, "other enterprises within the enterprise group" (CO_GP: 0.000 ***), participation in the group of firms have the highest significantly influence on the innovation activities. The customers or clients are the other partners of cooperation.

In Lithuania we found the significant influence of “introduction of new or significantly improved process – INN_P: 0,010***” and “introduction of new or significantly improved good onto the market: INN_G: 0.039***”. Both factors influence the % of TURNMAR in new or improved products introduced during 2010-2012 that were new to the market. The influence of INN_S is not significant. Again, we note that itself impact of INN_S was not confirmed, but in combination with other factors, it is possible to confirm as significant (see table 3). The self-financing from national sources is significant also in here. The cooperation is significant factor as in Estonia (CO_GP 0.028**). It is seen that the combination of various factors affecting the enhancement values in both countries.

Table 2 Combinations of Variables in Estonia - Importance of Innovation and Cooperation

	INN_S	INN_P
GP	0.004 (0.100)***	0.662 (0.081)
CO_GP	0.004 (0.113)***	0.430 (0.077)
CO_CUST	0.006 (0.071)***	0.210 (0.046)
CO_COMP	0.009 (0.051)***	0.099 (0.036)*
CO_SUP	0.461 (0.058)	0.034 (0.080)**
CO_COMP*FUNGMT	0.046 (0.047)**	-
GP*CO_CUST	0.007 (0.097)***	0.018 (0.051)**
CO_GP*CO_CUST	0.006 (0.087)***	0.019 (0.036)**
FUNGMT*CO_CUST	0.087 (0.058)**	0.506 (0.031)
FUNGMT*CO_SUP	0.289 (0.043)	0.009 (0.025)***

Legend: * significant at P<0.1; ** significant at P<0.05; *** significant at P<0.01; table shows p-values; values of sd are shown in brackets

Source: own research

The results in Table 2 show the selected combination of variables in Estonia. We focused (in accordance with the results of the determinants analysis) only on the importance of innovation and collaboration for the creation of innovations. The results confirmed that cooperation with various subjects brings positive effects (the rate of signification was increased). You can see the improved results in INN_S. "Improved service onto the market" in combination with all types of cooperation increase the level of determination (compare result: INN_S*CO_CUST: 0.006*** in opposite itself INN_S: 0.402 without influence; CO_CUST: 0.047**, but lower level of significance). Cooperation with competitors or other enterprises in sector (CO_COMP) has no significant influence 0.249 (see table 1); now if we analyse the combination with INN_S we obtain significant value 0.009***. Unfortunately, we confirmed also the negative role of national financial sources in combination with other variables. If we analyse these combinations, the results are lower (for example FUNGMT*CO_CUST*INN_S: 0.087**) or the level of significance is lower. We can conclude that public support does not always bring positive effects, especially if subsidies are not carefully targeted to the appropriate industry and to the target activity (totally clear type of innovation). It was confirmed also with results from INN_P analysis. If we analyse the combinations concerned INN_P, we obtain higher significance levels and better results also in combination with public funds (example: FUNGMT*CO_SUP*INN_P: 0.009*** means that public sector brings positive effects if support the process innovation in firm who cooperate with its suppliers).

The results in Table 3 show that Lithuania has the same situation regarding the impact of public finance as in Estonia. It shows that the combination of European and national money is in-significant (0.988), which confirms the need for proper targeting of public support. National sources brings the highest positive effects if support the process innovation (FUNGMT*INN_P is 0.001***). It was the same in Estonia.

Table 3 Importance of Innovation in Comparison with Public Financing in Lithuania

	INN_S	INN_P	FUNGMT	FUNEU
FUNGMT	0.768 (0.071)	0.001 (0.077)***	-	0.988 (0.062)
CO	0.307 (0.108)	0.071 (0.069)**	0.878 (0.113)	0.029 (0.081)**
CO_UNI	0.000 (0.103)***	0.348 (0.104)	0.298 (0.131)	0.005 (0.070)***
INN_G	0.016 (0.063)**	0.137 (0.079)	0.607 (0.059)	0.844 (0.053)
CO_GP	0.002 (0.077)***	0.066 (0.045)*	0.010 (0.051)**	0.575 (0.050)
CO*INN_S	-	0.004 (0.055)***	0.207 (0.068)	0.014 (0.030)**
CO_UNI*INN_S	-	0.000 (0.075)***	-	0.000 (0.035)***

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CO*FUNEU	0.014 (0.030)**	0.004 (0.043)***	0.907 (0.059)	-
CO_GP*INN_S	-	0.000 (0.047)***	0.078 (0.065)*	-

Legend: * significant at P<0.1; ** significant at P<0.05; *** significant at P<0.01; table shows p-values; values of sd are shown in brackets

Source: own research

However, firms can collaborate on innovation as well as with universities. Universities are often are often involved just to promote the service and process innovation. This university-industry cooperation is often supported from EU funds. In this combination, the EU money has the significant influence (for example: CO_UNI*INN_S: 0.000***; CO_UNI*FUNEU: 0.005***; CO_UNI*INN_S: 0.000***; CO_UNI*INN_S *FUNEU: 0.000***) on innovation firms' activities. A separate, albeit targeted support of INN_S, nor CO_UNI, nor FUNEU separately has not led to significant results (compare with Table 1).

Conclusion

One of the objectives of this study was to demonstrate the impact of the funding on innovative activity in the manufacturing sectors in Lithuania and Estonia. This goal we filled, we confirmed the impact of various financing sources. We conclude that public support achieved the greater effect only if it is well targeted; it is the individual support of the selected type of innovation. Positive effect can be further increased if the cooperation (targeted on creation of innovation) is supported by public funds. One of the partial results confirms if targeting of state aid is not correct, there are the negative effects and loss of ability to innovate in this case. All these results should help to improve the strategic management of public sector organizations (also the regional governments) to prepare better strategies and various sectoral policies. Financial schemes must be prepared and "fit" to targeted applicants well. It is unable to apply the approach "all fits to all". To increase efficiency, we recommend the clear definition of expected outputs, continuous monitoring and conditional funding.

The study results confirm the positive impact of cooperation. Likewise we show that cooperation may have a greater positive effect if it occurs during the formation of a certain innovation (and in combination with different entities - typically universities). An important implication arising from these results is that public policies to encourage the innovations creation should be selective, should be directed to selected sector and cooperation in the creation of a specific innovation have to be the aim. In this case, it is possible to record even the existence of knowledge spill-over effects mostly in knowledge networks.

Individual compared countries have very similar economies and therefore the results regarding the influence of finance and innovation cooperation are very similar. Due to the use of only selected CIS data it is not possible to generalize the results to all sectors of industry and the whole economies. However, the study can be useful as a basis for further research on the impact of various innovation determinants.

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NCRR – NEW FORESIGHT RESEARCH METHOD

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Abstract

Purpose of the article Foresight constitutes a tool for building the alternative visions of the future of a studied area. The foresight research projects use both the quantitative and qualitative methods. Despite their broad spectrum, they still lack methods focused on identifying the actions designed to achieve the developed vision of development of the research area. The scientific problem is therefore to determine how and with the use of what tools it is possible to identify priority actions ultimately enabling the implementation of scenarios of development of the studied area.

Scientific aim The scientific goal is the development and verification of a new research method allowing for the identification and classification of activities making it possible to achieve the desired visions of the future of the research area. The verification the new method of research will be conducted on the example of the most probable scenario of the development of tourism in the Podlaskie voivodship in the perspective of the year 2030, developed by a wide circle of experts and stakeholders within the framework of the implementation of the research project *Foresight as a tool for improving the management of tourism in the region*.

Methodology/methods The methods used to achieve the scientific objective involve desk research and the method of logic structure and analysis. The pilot study using the new method - NCRR, also used the method of a panel of experts and surveys.

Findings As a result of the undertaken research work, a new research method (NCRR) was developed and characterized. Within the framework of the pilot study, conducted with its use, the experts and stakeholders have designated the catalogue of 21 priority actions enabling the achievement of an established vision of tourism development in the perspective up to the year 2030. These activities are contained in six research areas: innovative tourism products and services; tourist entrepreneurship in the region; cultural and natural heritage; tourist infrastructure of the region; regional tourism policy; science, research and development in the region.

Conclusions The developed NCRR method represents a new tool of qualitative nature, enriching the catalogue of methods used in foresight research. Its use in the foresight research process not only allows to determine the vision of the future as before, but also makes it possible to determine real actions enabling their achievement in a specific period of time.

Keywords: research method, NCRR, foresight, tourism, Poland

JEL Classification: O18, P48

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Introduction

The future and its development for centuries has been the subject of interest of many researchers. One of the research tools enabling future prediction is foresight, successfully used around the world since the seventies of the twentieth century. It combines three processes, which include: the strategic planning process, the development of thematic policies (e.g. innovation, technological, scientific, regional), and the development of the future sciences (futures studies), (Szczebiot-Knoblach, 2013). H. Grupp & H. A. Linstone (1999) define foresight as the equivalent of a bundle of systematic efforts of looking into the future and making the most efficient choices. Foresight assumes that there is no one single shape of the future. Depending on the undertaken actions or lack thereof, at present many variations of the future are possible, but only one of them will come to pass.

Foresight is a set of tools facilitating the construction of scenarios of situation development in a relatively distant perspective (usually 10-20 years), as well as when a difficult to predict development of the situation may occur (Kuciński, 2006). It constitutes an attempt at the collective anticipation of important factors and risks that may affect the future of the society (Loveridge and Street, 2005). It is a deliberately organized process combining the expectations of various entities for the purpose of formulating strategies for the future (Webster, 2002). According to J. Cassingena Harper, the foresight process involves intensive, iterative periods of open reflection, networking, consultations and discussions that are meant to lead to the development of a common vision of the future and a sense of ownership of the developed strategies. A similar view is presented by J. Anderson (1997), indicating that foresight applies to shaping the future through concerted actions of self-sustaining networks of stakeholder groups. Ł. Nazarko (2011) notes that this distinguishes foresight research from other approaches focused on the exploration of the future. Foresight should be implemented through iterative, incremental, and even experimental tasks, thanks to which the stakeholders will become more aware of future opportunities, and at the same time, will commit themselves to take actions that reflect their better understanding (Salmenkaita and Salo, 2004).

Foresight is implemented using a variety of tools and methods both strictly scientific, as well as heuristic, based on expert intuition (Magruk and Jańczuk, 2009). Specialist literature concerning foresight research, contains a description of more than one hundred sixteen methods. Among them, however, there are no methods focused on the identification and classification of activities. Many foresight projects implemented so far focused on the development of visions of future development, however they did not translate into specific actions aiming to enable the achievement thereof. This represents a weakness of foresight, taking into account that it is perceived as a process aimed at decision-making and taking action (Gavigan et al, 2001; Miles et al, 2008).

1 Characteristics of the NCRR method

The analysis of 116 foresight methods identified by A. Kononiuk and A. Magruk (2008) proves that despite their wide spectrum, there is still the lack of methods focused on the identification of actions enabling the achievement of the designed visions of development of the research area. In addition, the analysis of 55 Polish and 89 foreign reports on the implementation of foresight projects indicates that many of them result merely in analytical studies or the designation of scenarios for the development of the research area. Unfortunately, the problem is the fact that, in regard to them, the research teams do not seek to designate a set of concrete priority actions, the consistent implementation of which would make it possible to achieve the future specified in the scenarios. The scientific problem is therefore to determine how and with the use of what tools it is possible to identify priority actions ultimately enabling the implementation of scenarios of development of the studied area.

In response to the identified problems the author has attempted to develop a method, named NCRR, focused on the identification of actions. The abbreviation NCRR means: N - new, C - continued, R - restored, R - redundant. The purpose of the NCRR method is to identify a set of priority actions enabling the achievement of a particular vision of the future. In the opinion of the author, the NCRR method should be classified as belonging to the group of qualitative expert methods.

The NCRR method should be implemented in two stages. In the first stage, a particular group of experts and stakeholders in the development of the research area, within the framework of an expert panel, should identify the greatest possible number of activities (affecting the development of the studied area) divided into four categories:

- new activities, not yet undertaken (N - new);
- activities carried out to date (including the ones resulting from the existing strategic documents), which should be continued (C - continued);

- activities carried out to date (including the ones resulting from the existing strategic documents), the implementation of which should cease (R - redundant);
- activities, which were carried out in the past, and the realization of which should be restored (R - restored).

With this approach, the analysis will cover all the current activities, future activities, as well as the ones implemented in the past. The identified activities, depending on the needs, may be assigned to narrower subject areas, such as "regional policy", "infrastructure", "society". This procedure will greatly facilitate both the work of experts and stakeholders, as well as will increase the clarity of the generated results. Depending on its size, a group of experts and stakeholders can be divided into smaller working groups, bearing in mind that each of them should include representatives of various professional spheres from the studied area. After the completion of the work, the results should be discussed in the course of a structured discussion aimed at achieving a consensus on the results obtained. The result of the work of the expert panel should be wide list of activities, which will serve as the starting material for the second stage of the study.

The second phase of the study should involve a wide circle of stakeholders in the development of the research area. For its use, a questionnaire should be prepared (in paper or electronic form), which will contain a description of the vision of the future (most likely or a few alternative ones) and a list of activities identified in first phase (divided into four categories, as well as if needed, into thematic areas). The task of the stakeholders will be the indication of a specific number (e.g. three) of the most important in their opinion activities that will enable the achievement of the present vision of the future. It should be noted that the redundant activities, the realization of which should cease (redundant), should also be included in the form, in order to be verified by a wide circle of stakeholders, whether they have been correctly assigned to this category. This means that the respondents will also be able identify the action that was identified by experts and stakeholders in the first phase as redundant, the execution of which should cease to be the one of greatest importance. The NCRR method, as a result, should enable the emergence of a set of priority actions, whose implementation in the prescribed term will result in the achievement of the specified vision of the future.

The NCRR method combines the knowledge and opinions of experts and stakeholders. The group of study participants should include individuals with expertise in the area of research, who are future-oriented and broad-minded. The group should be diverse in terms of the represented professional sphere, education, gender, and age, which will allow for the indication of a large number of different activities in the course of the research process. The involvement of stakeholders from various spheres of the research area, in the longer perspective will have positive impact on the regional development (Nazarko, 2012, 2013; Ejdys, 2013; Dębkowska, 2013), development of innovative products and services (Szymańska, 2013; Panfiluk, 2013) and the construction of social networks, including the virtual ones (Stapaniuk, 2014, 2015).

2 The results of the pilot study, using the NCRR method

The pilot studies using the NCRR method were conducted within the framework of the implementation of the research project *Foresight as a tool for improving tourism management in the region*¹, financed by the National Science Centre. The research problem of the project has been defined in the form of a question: Whether and how to improve the process of managing the development of tourism in the region, with the use of research foresight? As part of the realisation of the research project, a methodology for the incorporation of foresight studies into the creation of a tourism development strategy in the region has been designed, using the methodology for the design of hybrid systems A. Magruk (2012). The construction of the hybrid method was performed in the context of its three key areas: foresight process stages, research context, and the classification of methods. For the purpose of the methodology of incorporation of the foresight research in the process of developing strategies of tourism development in the region, the author has chosen 10 methods: desk research, STEEPVL analysis, structural analysis, Delphi method, surveys, conferences, expert panels, brainstorming, voting, scenario method. Because of the identified research problem concerning the lack of translating the developed scenarios into a set of priority actions, the author has proposed a new method – NCRR.

As part of the realisation of the various stages of the project, experts and stakeholders of tourism development in the region have developed four scenarios of development:

- Scenario 1 – Inno-Eco-Cul Podlaskie (Innovative-Ecological-Cultural Podlaskie) – is based on the assumption of a high capacity to create innovative tourism products and services assuming the

¹ Detailed test results obtained within the framework of the implemented project have been presented in (Szpilko, 2015).

favorably evolving regional tourism policy. The probability of implementation in the perspective of the year 2030: 39.51%.

- Scenario 2 – Underappreciated Innovator – assumes a high level of ability to create innovative tourism products and services, despite the unfavourable regional tourism policy. The probability of implementation in the perspective of the year 2030: 29.39%.
- Scenario 3 – Flightless – is based on the low capacity to create innovative products and services in the region and simultaneous unfavourable regional tourism policy. The probability of implementation in the perspective of the year 2030: 10.49%.
- Scenario 4 – Idle Bison – assumes a low level of capability to create innovative tourism products and services in the region, despite the favourable regional tourism policy. The probability of realization in perspective of the year 2030: 20,61%.

In relation to the developed scenarios of development of tourism in the Podlaskie Voivodship in perspective of the year 2030, using the NCR method in the next stage of research activities, the experts and stakeholders have identified the priority actions allowing the implementation of the scenario with the highest probability, that is "Inno-Eco-Cul Podlaskie".

A team of experts and stakeholders in the first stage of the NCR method study consisted of 7 representatives from the sphere of science, business, government, and NGOs. As part of the expert panel, activities related to the development of tourism in the Podlaskie voivodship have been identified, divided into four categories:

- new activities, not yet undertaken (N - new);
- activities carried out to date including in Tourism and Tourism Infrastructure Development Programme in Podlaskie province in 2010-2015, which should be continued (C - continued);
- activities carried out to date including in Tourism and Tourism Infrastructure Development Programme in Podlaskie province in 2010-2015, the implementation of which should cease (R - redundant);
- activities, which were carried out in the past, and the realization of which should be restored (R - restored).

The actions have been identified, divided into the following research areas: RA1: Innovative products and tourism services, RA 2: Tourist entrepreneurship in the region, RA3: Cultural and natural heritage, RA4: Tourist infrastructure of the region, RA5: Regional tourism policy, RA6: Science, research and development in the region. The catalogue of the identified activities is presented in Table 1.

Table 1 Activities in the field of tourism development in the Podlaskie voivodship, classified into groups according to the NCR method

Category	Activities in research areas
Research area 1: Innovative products and tourism services	
N (new)	<ul style="list-style-type: none"> – creating innovative supra-regional products, covering with their range a minimum of 2-3 voivodeships (including the Podlaskie Voivodeship) – creating opportunities to build personalized (individual) tourist packages based on the online platform for the potential tourists – creating products under the MICE tourism development (meetings, incentive events, conferences, exhibitions) with supra-regional scope – construction of a product - creative tourism – creation of specialized agrotourist products – creation of qualified tourism products - horse riding and canoeing – creating innovative cross-border (Lithuania, Belarus) tourist packages based on natural and cultural regions
C (continued)	<ul style="list-style-type: none"> – routes of water tourism - a coherent tourist offer for the entire Podlaskie voivodeship – construction of the tourist offer directed to children and young people as well as families with children – construction of the product - tourism of interests – action for the development of active and recreational tourism based on a well-developed network of hiking and biking trails – enriching the offer of the Podlaskie Voivodeship in the field of conference tourism – development of congress activities
R (redundant)	<ul style="list-style-type: none"> – expansion of the tourist offer of the region based on winter sports – development of the Podlaska Book of Tourist Products
R (restored)	<ul style="list-style-type: none"> – development of branded products – construction of products using military facilities

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- expansion of the existing and development of new products in health tourism
- expansion of the existing and development of new products in nature tourism

Research area 2: Tourist entrepreneurship in the region

- | | |
|---------------|--|
| N (new) | <ul style="list-style-type: none"> - establishment of a regional programme in the field of preferential conditions and support for the newly emerging tourism enterprises - support under the public-private partnership of key tourist investments with supra-regional scope in the areas adjacent to environmentally valuable areas - directing the functioning of the East Poland Tourist Brand Cluster to support the development of entrepreneurship in the tourism sector - gaining support from foreign investors for the implementation of key tourist investments with supra-regional scope - organizing ventures for the dissemination of public-private partnership - undertaking actions aimed at promoting the offer of regional tourism enterprises at international fairs - support for enterprises in the tourism sector in the implementation of CSR (corporate social responsibility) - organizing competitions for the best projects in the tourism sector undertaken in the region |
| C (continued) | <ul style="list-style-type: none"> - promotion of projects and investment plans based on public-private partnership, enhancing the tourist offer of the Podlaskie voivodeship - formation of tourist staff for the needs of the local labour market |
| R (redundant) | <ul style="list-style-type: none"> - support of activities aimed at the development of local associations working in the tourism sector - creation of tourism clusters in separate areas of the Podlasie tourism industry - creation of an advisory program for SMEs operating in the tourism sector - supporting the tourism industry in the implementation of standardized quality management systems |
| R (restored) | <ul style="list-style-type: none"> - undertaking inter-municipal cooperation for the development of local entrepreneurship |

Research area 3: Cultural and natural heritage

- | | |
|---------------|---|
| N (new) | <ul style="list-style-type: none"> - promotion of natural and cultural heritage of the region on domestic and foreign markets - establishing a system of discriminants (also architectural) allowing the identification of individual local cultures, based on local cultural heritage - creation and implementation of tourism projects of supralocal, and even supra-regional significance based on the unique natural and cultural heritage of North-Eastern Poland - integration of local communities around the traditions and customs with an attempt to recreate and digitize cultural resources, tangible and intangible assets |
| C (continued) | <ul style="list-style-type: none"> - revitalization of separated urban complexes of historic parts of towns and cities, of the Podlaskie voivodeship - organization of cultural events of high artistic value, of national and international importance, based on existing products and tourist attractions of the region - raising the competitiveness of the region through the development and strengthening of tourism products functioning within the framework of cultural and religious tourism |
| R (redundant) | <ul style="list-style-type: none"> - creation of a Network of Cultural Parks |
| R (restored) | <ul style="list-style-type: none"> - expansion of cultural and national diversity |

Research area 4: Tourist infrastructure of the region

- | | |
|---------------|---|
| N (new) | <ul style="list-style-type: none"> - investments in road infrastructure, increasing the accessibility of the Podlaskie voivodeship - development of infrastructure near bodies of water - creation of gastronomic facilities serving regional cuisine - construction of four and five star hotels - implementation of the technology of the virtual tour of the region, including in real time, for people with sight and hearing impairments - construction of a large-amusement park |
| C (continued) | <ul style="list-style-type: none"> - revitalization and creation of new complexes of health resort areas - creation of and implementation of projects regarding the construction and expansion of the technical infrastructure to increase the availability of the greatest tourist attractions - creation of tourist routes - development of the system of off-road tourist signs and a network of self-service tourist information |
| R (redundant) | <ul style="list-style-type: none"> - construction of facilities of collective accommodation, including hotel facilities of various standards - also within the framework of PPP - creation of projects and undertakings enabling the development of recreational areas and of areas of particular importance for the development of summer and winter sports, based on the unique natural resources, numerous water reservoirs and natural terrain - expansion of a Network of Tourist Information - creation of investment projects in the tourism sector at the local government level based on the revised principles of public-private partnership - promoting the formation of multi-purpose, generally available Recreational Centres based on the natural resources of the individual areas of the region |
| R (restored) | <ul style="list-style-type: none"> - construction of a regional airport - construction of a high-speed rail to Warsaw - creation of small infrastructure in forest areas |
-

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Research area 5: Regional tourism policy

N (new)	<ul style="list-style-type: none"> – development of spatial plans for the voivodship, taking into account the tourist function – creating a coherent vision for the development of tourism in different parts of the voivodeship, taking into account the cultural and natural diversity – development of a new strategy for the development of tourism (tourism products) in the Podlaskie voivodship, in the perspective up to the year 2030 – development of a system of visitor management in the areas of outstanding natural beauty – promoting intermodal cooperation between own producers of regional and traditional products – streamlining of visa procedures with Belarus – construction of virtual tourist communities related to the Podlaskie Voivodeship for the effective construction of the image of the area
C (continued)	<ul style="list-style-type: none"> – development and adoption of planning documents at the level of each of the municipalities of the Podlaskie Voivodeship, providing basis for making location decisions in the new areas of the region, with special emphasis on attractive tourist sites and areas adjacent thereto – diverse, promotional activities targeted at the external and the internal market – establishing greater cooperation with the neighbouring regions of Poland, Lithuania and Belarus in order to exchange experiences and mutually promote tourist products – cooperation with the tourist companies for the promotion of their offers – creation of a system of tourist quality labels – professional development of information, cultural, and economic staff, as well as public services, including the police and the units of municipal police
R (redundant)	<ul style="list-style-type: none"> – improvement of the competitiveness of the region through organized activities of supralocal nature, supporting the development of agrotourism – appointment of the Podlaskie Tourist Forum
R (restored)	<ul style="list-style-type: none"> – organization of the Podlasie Tourism Fair – more extensive inclusion of tourism in the regional strategy

Research area 6: Science, research and development in the region

N (new)	<ul style="list-style-type: none"> – development of various forms of cooperation (not necessarily formalized) between the tourism business, administration, and science – development of research on the regional tourism market within the framework of cooperation between scientific institutions (educating tourist staff in the region) and other stakeholders (including national and landscape parks) – increasing the competencies of tourist staff through the organization of conferences, training, seminars, workshops – improving and extending the scope of cooperation between different social and economic environments within the field of tourism
C (continued)	<ul style="list-style-type: none"> – monitoring of the effectiveness of promotional activities undertaken on the local and regional level – conducting qualitative research regarding inbound tourism in the area of the Podlaskie voivodeship – conducting qualitative research on the size and structure of the incoming tourist traffic – development of monitoring tools of the tourism economy, taking into account the modern research methods – monitoring of the inbound tourism offer in the tourist areas of the Podlaskie voivodeship in the context of market needs – monitoring of the needs on Podlaskie labour market regarding the tourist and tourist-related services
R (redundant)	<ul style="list-style-type: none"> – valorisation of the tourist areas of the region in terms of the attractiveness regarding tourist traffic – monitoring of the competition - good and bad practices
R (restored)	<ul style="list-style-type: none"> – systematic conducting of qualitative research on the needs of tourists

Source: own

During the second stage of the study the identified catalogue of activities, divided into six research areas in the form of a CAWI questionnaire was sent to 42 experts and stakeholders in tourism development of the Podlaskie voivodeship. It should be noted that the redundant activities, the realization of which should cease (redundant), were also included on the form for the purpose of their verification, whether they had been correctly assigned to that group of activities. Each of the respondents was supposed to precisely indicate three most important, according to him, activities in each of the research areas that affect the implementation of scenario 1, with the highest probability of its implementation - Inno-Eko-Kul Podlaskie. This scenario is based on the assumption of high capacity to create innovative tourism products and services with the favourably evolving regional tourism policy. The development of tourism in the region is stimulated by the development-oriented entrepreneurial behaviour of the local population as well as agile and effective actions of the local and regional authorities.

As a result of the conducted study, a set of 21 priority activities was obtained, which according to the respondents should be undertaken in the perspective up to the year 2030 in each of the six research areas that in order for the Inno-Eko-Kul Podlaskie scenario to be carried out. The set of priority activities is presented in Table 2.

Table 2 Priority activities for the development of tourism in the Podlaskie voivodeship in the perspective up to the year 2030

Research area 1: Innovative products and tourism services

1. Creating innovative cross-border (Lithuania, Belarus) tourist packages based on natural and cultural assets of the regions
2. Development of the existing and the construction of new spa tourism products
3. Creating opportunities to build personalized (individual) tourist packages based on the online platform for the potential tourists

Research area 2: Tourist entrepreneurship in the region

1. The creation of a regional programme in the field of preferential conditions and support for the newly emerging tourism enterprises
2. Support under the framework of the public-private partnership of key tourist investments with supra-regional scope in the areas adjacent to environmentally valuable areas
3. Formation of tourist staff for the needs of the local labour market

Research area 3: Cultural and natural heritage

1. The organization of cultural events of high artistic value, of national and international significance, based on the existing products and tourist attractions of the region
2. Creation and implementation of tourist projects of supralocal, and even supra-regional significance, based on the unique natural and cultural heritage of the North-Eastern Poland
3. Promotion of natural and cultural heritage of the region on domestic and foreign markets

Research area 4: Tourist infrastructure of the region

1. Revitalization and creation of new complexes of health resort areas
2. Investments in the road infrastructure, increasing the accessibility of the Podlaskie voivodeship
3. Construction of a regional airport

Research area 5: Regional tourism policy

1. Broader inclusion of tourism in the regional strategy
2. Development of a new strategy for the development of tourism (tourism products) in the Podlaskie voivodeship in the perspective up to the year 2030
3. Streamlining of visa procedures with Belarus

Research area 6: Science, research and development in the region

1. Development of various forms of cooperation (not necessarily formalized) between business tourism, administration, and science
 2. Conducting research regarding inbound tourism in the area of the Podlaskie voivodeship
 3. Monitoring of the effectiveness of promotional activities undertaken on the local and regional level
-

Source: own

3 Discussion

The results obtained in the course of the realisation of the research project, with the use of the NCR method, are of a pilot nature, since the purpose of the conducted research process was primarily to verify the applicability of the proposed method. Due to the pilot nature of the research, a conscious decision was made to refrain from interfering in the work of the experts and stakeholders and from substantive justification of and commenting on the obtained results, which in some ways may seem inconsistent or unclear. This action was intended and aimed to visualize the weaknesses and imperfections of the developed method. Thanks to this operation it is possible to clearly state that in the course the work of expert groups and stakeholders with the use of the NCR method, the presence of a moderator is necessary. His tasks should include structuring and directing the works and striving to achieve a consensus in the first stage of the research. An important issue, that should be dealt with in the course of applying the NCR method is the substantive quality of the content and the variety of process participants in terms of the represented professional sphere, education, gender and age. The involvement of incompetent, homogeneous groups of experts and stakeholders in the research process can constitute a significant disadvantage of the NCR method, especially when the participants attempt to identify the priority actions from the standpoint of their performed professions or conducted businesses, and not those that are most relevant for the development of the research area.

In the course of the conducted research process also the disadvantages of using the NCRR method have been highlighted. Among the disadvantages, it is particularly important to indicate the lack of the possibility of a direct exchange of views among the participants in the second stage of the study and the need to involve a relatively large and broad in terms of the professional sphere represented group of the participants of the study. Major defects in the context of the need to involve many participants, could also affect the duration of the study and its costs. In particular, when the participants receive remuneration for participating in the study.

Conclusion

The NCRR method developed and characterized in this article represents a new instrument enriching the catalogue of methods used in foresight. Its advantage is the focus on the identification and classification of activities enabling the achievement of specific visions of future of a given research area. The NCRR method may in particular be used as a complementary option to the scenario method. It can be used both to identify actions that will have an impact on the implementation of the scenario with the highest probability of its occurrence in a certain time perspective, as well as to determine the activities for alternative scenarios. At the same time, it can constitute a response to the disadvantage of the scenario method, namely the difficulty in translating the developed scenarios to specific decisions and actions.

Based on the conducted pilot study, it can also be determined that the NCRR method can constitute a useful tool in the process of strategic management of tourism in the regions. As is clear from the analyses conducted so far, within the framework of the process of formulation of regional tourism development strategies, a significant number of objectives and strategic actions is determined. Their variety and a broad spectrum makes it difficult to identify which ones are priority, thanks to which tourism would have a chance for dynamic development in a given region (Ejdys and Szpilko, 2013). Thanks to the use of the NCRR method, with wide public participation, it will be possible to identify a set of priority activities that will enable the achievement of the assumed vision of the future development of tourism in the region. Through its use, an additional effect can also be obtained, in the form of a sense of responsibility of the study participants (at least in part) for the implementation of activities, which they are co-creators of.

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INTUITIVE SCENARIO DEVELOPMENT METHODS

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Abstract

Purpose of the article Scientific studies indicate that in order to successfully manage an organization in the modern external environment, it is important to apply future foresight methods within the planning context. This technique should be applied in a manner that enables foresight of developing factors in the forthcoming turbulent external environment as well as making proactive strategic management decisions that can prevent these organizations from losing competitive advantage. The intuitive scenario development method for the foresight of future uncertainties and developing proactive responses will be applied in this article. Intuitive scenario development is determined by the specificity of social research paradigm intuitive epistemological position assumptions.

Methodology/methods Systematic and comparative analysis of scientific literature.

Scientific aim To propose framework for intuitive scenario-building research based on the the interpretivism epistemology assumptions.

Findings Systematic and comparative literature analysis reveals that intuitive scenarios are created from equivalent interpretivism epistemological qualitative methods. Future contingencies can be provided by applying Delphi interviews or using the future foresight workshop method. Intuitive scenarios are developed from creative writing techniques, with the quality of the scenario verified from expert evaluation method.

Conclusions (limits, implications) In order to expand on the intuitive scenario development methodology, it is important to verify theoretically and empirically whether the methods discussed are sufficient to the hermeneutical methodology-based qualitative research.

Keywords: scenarios, interpretivism, epistemology, methodology, future foresight, intuition.

JEL Classification: M10, M31

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Introduction

Nowadays, organizations that work in the external environment have to compete in difficult, turbulent conditions within their industry. Turbulent external environments will demand from business organizations new skills and strategic tools that can ensure a sustainable competitive advantage. One of the most important skills in the management of an organization in today's external environment are the future foresight and proactive responses to future situations. An uncertain future can be seen as the main and most serious threat to organizations, encompassed in with modern external environment result. It describes ambiguous results of various actions undertaken by organizations in unpredictable situations, without the necessary information about the external environment (Herzig, Jimmieson, 2006; Ebrahimi, 2000; Wilson, 2009).

In scientific discussions the methodological approaches of foresight development are being developed intensively (Money, Gardiner, 2005; Becker, 1989; Shoemaker, 1995; Schwab, Cerutti, von Reibnitz, 2003; etc). To date, it is one of the most widely and comprehensively established, developed methodologies (Piiirainen et al., 2010; Godet, 2000, 2006; Mietzner, Reger, 2004; Ratcliffe, 1999; van Notten, 2005; etc). It can be explained by the fact that the scenario development method is equated with the strategic planning tool (Godet, 2000; 2006) and its application is a strategic response to the external environment turbulence (Thwaites, Glaister, 1992) and the future foresight method is directed to the future foresight, identification of optimal solutions and adoption, development of the organization's strategic planning competences (Fahey, Randall, 1998).

The modern future foresight methodology are dominated by three types of scenario development methodological approaches: *la prospective* (in French), intuitive and probability modified tendencies' school. The methodological diversity of these scenario manifests itself through the extreme nature of reality perception. Intuitive methodological approaches based on scenarios, include the perceptions of the future, because these scenarios are based on anticipation. Meanwhile, *La prospective* and the probability modified tendencies' based on scenarios methodological approaches include objectively perceived future, because these scenarios are based on mathematical prognoses.

Scientific theoretical and empirical research results are ambiguous. Some authors have provide evidence to support that the intuitive methodological approach is less efficient than objective non intuitive methodologies, since intuition and emotions are often the basis for adopting wrong decisions (MacGregor, Slovic, Lichtenstein, 1988; Tversky, Kahneman, 1974; MacGregor, Armstrong, 1994). Another part of the study reveals the advantages of intuitive approaches (Lee, Amir, Ariely, 2009; Pham, 2004), which determines optimality of this scenario creative methodological approach to modern business organizations: as a planning tool, scenarios should reveal many possible consequences in the future, rather than the one most probable. Probability application in scenarios methodologies results in excessive precision and detachment of story lines: the probabilities are expressed in the numbers, and require precision and accuracy of foresight. Meanwhile, the scenarios are the best when they stimulate flexibility and innovative thinking about the future. Forecasts can capture trends, but they cannot capture discontinuities, which can be "grasped" by intuition and imagination. Future contingencies are identified higher quality in multiple equally likely scenario than in traditional quantitative forecasts.

Viewpoint to scenario based on intuitive methodological approach expresses not only provided features, but also interpret epistemological position, whereas the ontological, epistemological and axiological assumptions allow for the selection of optimal intuitive scenario development methods. Meanwhile theoretically, the intuitive scenario creation methods are analyzed chaotically and non-systematically, and are isolated from interpretive epistemological position, which leads to fragmentation of intuitive scenario development methodology.

The purpose of this publication is to propose framework for intuitive scenario-building research based on the the interpretivism epistemology assumptions

1. The assumptions of interpretive epistemology position

Each of the prevailing scenario development methodological approaches have the same function - to create future scenarios. However, these methodological approaches can be characterized by different ontological, epistemological, axiological and methodological assumptions. Social research paradigm includes two extreme epistemological positions: positivism and interpretivism (Spiggle, 1994; Tien, 2009; Handriana, Dharmmesta, 2013). Conducted analysis on these extreme positions epistemological, ontological, axiological and methodological assumptions, shows that they are distinguished by two main aspects: the nature of reality and methodology. Positivist research is based on the researcher's objectivity and quantitative strategy while interpretivist research is based on the researcher's and the respondents' subjectivity and qualitative strategy. Ontology of these extreme epistemological approaches (objectivity - subjectivity) determines the other

epistemological assumptions of analyzed approaches. Taking into account the fact that the intuitive scenario are based on anticipating the future, rather than foresight, it can be said that interpretivist assumptions are characteristic for these scenarios.

Table 1. Interpretivist epistemology assumptions

Aspects of epistemological positions assumptions	Interpretivism
Ontology	
Nature of reality (truth)	Socially constructed
	Multiple
	Holistic
	Contextual
Nature of social beings	Voluntary
	Proactive
Axiology	
The main goals	Perception is based on endless interpretations
Epistemology	
Knowledge generation	Idiographic
	Time-bound
	Context-dependent
The approach to causation	Multiple, simultaneous shaping
Research interrelations	Interactivity, collaboration
	Monitoring is not important
Methodology	
	Qualitative

(Hudson, Ozanne, 2004; Hjørland, 2004; Tadajewski, 2006; Holden, Lynch, 2004)

Ontology is the philosophical theory of being, concentrated on the nature of reality, seeks to answer these questions: what is the form and nature of the reality and what can be known about the reality? (Guba & Lincoln, 1994). Subjectivist ontology is based on the assumption that reality is the result of the process of human cognition (Kamil, 2011). Reality does not exist, because what is called reality by people, is in-deed based on an individual's activities of daily living experiences - this is a socially constructed reality. In this context the subjectivist ontology following the aspects of research based on interpretivism para-digm are distinguished (Tien, 2009; Hudson & Ozanne, 2004): the goal of research based on interpretivism paradigm is - to understand the phenomenon as it is through subjective experience. Interpretivism support-ers comply with the provisions that reality is essentially mental which is why individuals create different measures –for example, theories, categories - in order to give meaning to the world. Individuals perceive reality differently this is why it is multifaceted. The multiple reality can only be analyzed from holistic perspective. Interpretivism based research requires the researcher's interaction with research participants, because social reality is based on perception of those individuals and groups. Therefore, in order to con-ceive the above mentioned perception, individuals must be involved in the research process. Interpre-tivism supporters assume that truth does not exist, because reality is only a set of interpretations. In re-search based on interpretivism, data interpretation is dedicated to understand the context phenomenon and the object of the research is interpreted from the subjective experiences of the researcher (Hjørland, 2004).

Axiology is a philosophical theory that analyze in a broad sense and seeks to answer the following questions: what relationship exists between the use/ consumption and moral rules? Distinguishing whether the research object was studied from the basis of moral norms? What is the relationship between technical, procedural aspects of the investigation and the investigator's moral standards? (Handriana, Dharmmesta, 2013). According to Hudson, Ozanne (2004), in the context of interpretivism, it is important to understand the subject's behavior,

rather than predicting it. In interpretivism perception is a continuous process, or in other words interpreting the subject's past behaviour including how the existing will/can affect future in-terpretations.

Epistemology is the theory of knowledge which seeks to answer the main question: what is the nature of the relationship between the one who knows / will know and the object of knowledge? (Guba, Lincoln, 1994). According to Tien (2009), epistemology investigates the relationship between the researcher and the participant of research and defines epistemology as set of assumptions that characterize the most effective ways to investigate the nature of the world. Kamil (2011) asserts that the subjectivist epistemology is based on the assumption that there cannot be unquestionable truth, because the truth is an individuals' intersubjective socio-cultural opinions coincidence, which is treated as objective knowledge. Kamil (2011), notes that according to the subjectivist epistemology, an individual's reality is shaped by language games, discussions, interests, traditions and attitudes to the world. Tien (2009) distinguishes interpretivism epistemology main underlying assumptions as: (1) interpretivists respond to research from the historical and limited point of view, because the phenomenon is defined in time and space context. Interpretivists seek to identify the motives, values, and other causes of subjective experience, characterized by a particular time and context; (2) knowledge gained through interpretivist study are perceived as subjective and contextual; (3) in interpretivism epistemology, the researcher do not have the possibility to establish the causation, because all subjects are in a state of simultaneous formation, and hence it is difficult to separate cause from effect; (4) the social world is in status of constant formation and variable; (5) in particular, the researcher must assess how individuals understand the world and interpret it according to the meaning of individuals' social actions; (6) interpretivists assume that the researcher affects the interaction of the study subjects.

Interpretivist qualitative research is based on empirical research strategy. Based on its principles of logic and assumptions as presented in scientific literature (David et al., 2009; Krefting, 1990; Lee, 1992), we can suggest that quantitative research strategy allows an objective assessment of reality which results objective knowledge. Meanwhile, the qualitative research strategy permits the revelation of truth (or reality) and to generate knowledge through subjective individuals (eg, the experts involved in the research) experience. According to Sotiropoulos, Harris (2012) qualitative research strategy is frequently criticized for subjectivity.

2 Intuitive scenario development methods: interpretivism epistemology context

Perspectives on the scenario based on intuitive methodological approach are expressed by a unique definition, where the scenario development process is more consistent, with empirical methods applied in the stages of the process. Ogilvy, Schwartz (2004) determines that descriptive scenario based on current situation creates the possibility to make decisions related to the future. In other words, from the framework of intuitive scenario development methodological approach, a scenario is regarded as a detailed potential future image, which includes proactive management decisions, adequate to previously mentioned future images (Schwab et al., 2003). According to Schwartz (2007), the scenario development process can be classical within the context of intuitive scenario creation methodological approach. The scenario development process based on intuitive methodological approaches is divided into the following phases: anticipation of future uncertainties, scenario development and quality assessment of created scenarios.

A variety of methods and techniques applied in scenario development process have been presented in scientific literature. However, these works lack significant methodological integrity based on the fact that there is no evaluation which proves whether intuitive scenario creation methods create interpretivism position epistemological assumptions.

2.1 Future uncertainties foresight methods

Systematic and comparative analysis of scholarly studies revealed that to discover predictive future contingencies, anticipating intuitive scenario development methodology can be used Delphi (Ringland, Young, 2006; Bazzani, Canavari 2013; Rowe, Wright, 1999; Cuhls, 2003; Loveridge, 1999; et al.), Interviews (Ratcliffe, 2002; Kosów, Gsabner, 2008; Saurin, Ratcliffe, Puybaraud, 2008; et al.), and future foresight workshop methods (Kosów, Gabner, 2008; Borjeson et al., 2005; Godet, 2000; et al.). Looking at these methods from the perspective of interpretivism epistemological position, it can be generally said:

1. Delphi, interview methods and strategic foresight workshops take part within the context of interaction (researcher interactively communicates with research participant(s)), and opinion presented during this research is closely related to that context. Processing and summarizing knowledge generated during this research it is important to pay attention to their formation context. The general consensus is that one of the weaknesses of qualitative research strategy is contextually: every social context is unique and is constantly evolving, making it difficult to verify the quality of

data validity and reliability (Golafshani, 2003). Meanwhile, from the perspective of intuitive scenario development perspective - it is contextual fulfillment of interpretivism.

2. Contrasting to the formation of an objective reality and immeasurable formalized scientific models, Delphi, interviews and strategic foresight workshop methods of philosophical discourse can be called negotiations about future events. According to Kvale, Brinkmann (2008), qualitative interviews help generated description regarding daily experience s, narratives and epistemic knowledge supported by the investigator and the entities involved in the interaction discursive.
3. In most cases, the formation of scenarios usually focus on the individual events, but often it is important to analyze the events in their underlying patterns in order to understand the typical scenario storyline. Ogilvy, Schwartz (2004) proposes to use Peter Senge iceberg metaphor: on the top of the iceberg are the events taking place around us (eg., Political elections). It is appropriate to analyze "deeper" those events caused by future models. In the above-mentioned models lie the significant structural changes that can define a significant development in the direction of the scenario. For a scenario-forming team seeking a deeper understanding of the interaction between different forces, it is appropriate to describe individual events, models, structural changes, consolidate insights of all the participants, and identify interactions of contingencies.

To summarize, the application of above mentioned methods permits feeling to uncertainties of the future as well as their cause and development policies, since these methods allow the researcher to communicate interactively with research participants until uncertainty of future development will be revealed and identified the causes of its formation. In other words, Delphi, interviews and future foresight workshop methods require a high degree of involvement by the researcher and, according to Bill (2005), allows the researcher to identify important investigated aspects of the subject that can be "purified" only allowing interview participants intuitively to provide the desired information to the narrative, or different in any chosen form. In this way, a holistic approach to the future is ensured.

2.2 Scenario development method

The scenario development methodology presents very limited prospects for scenario development methods and techniques, since the majority of scenario development methods and their implementation techniques are focused on future contingencies distinguishing, rather than on scenario content development. In this context distinguishes creative writing method, which methodology includes not only guidelines of the final result, but also the story development methodological principles (Morley, 2007).

In order to assess whether creative writing method fulfills interpretivism epistemology positions assumptions, it is important to discuss the concept of creativity in the broad sense. According to Torrance (1993) summarized perspectives, it is stated that creativity can be defined as: new ideas for incorporating radically new innovations or solutions to the problem, or a radical reformulation of the problem, generation; integration of existing knowledge in different ways. Creative solutions, regardless of whether they are new, or restored, must be valuable. New insights from Sefertzi (2000) summarize and conceptualize creativity as: the generation of new ideas or new reformulation of known elements, thus forming valuable decision-making methods. Scientifically, various disciplines in literature state that complexity and creativity are linked with two-way communication: (a) the complex system / phenomenon containment which requires creative solutions (Kozbelt, Beghetto, Runco, 2012); (b) creative individuals solve complex problems more effectively, because they are not afraid of them (Montuori, 2003; Hennessey, Amabile, 2010; Kim, Cramond, Van Tassel-Baska, 2010).

The nature of the future developed in intuitively scenarios are complex, so perspectives suggest that creative writing method ensures that scenario will include the contents of the complex future situations. This ensures interpretivism epistemological position and creates the maximum detail and developed scenario that allows more accurate strategic decisions.

2.3 Intuitive scenario quality monitoring method

Intuitive scenario development methodology does not distinguish which methods are used to assess the scenario content quality. The latter limitation of scenario assessment methodology can be explained by the exclusion of the evaluation methods of social research methodology.

According to Given (2008), in the context of social research methodology, the purpose of evaluation research is a formal and systematic assessment of an individual's activities. Given (2008) emphasize that social research methodology does not distinguish methods, specific to the assessment, but includes methods of qualitative research strategy. However, qualitative methods, with the aim to evaluate specific aspects, are characterized by evaluation design, which is designed to measure a specific program or organization: qualitative methods

application used to assess the specific program is focused on social programs' evaluation. While qualitative methods used to assess the organization, are focused on factors that influence the production and delivery (Given, 2008). Given (2008) separately discuss the classification of the evaluation methods based on design, divides the evaluation to: (1) strategic, (2) process and (3) result. According to the above mentioned author, the distinction is reflected in the evaluation process stages. Strategic assessment defines/ describes the social system, before the occurrence of specific changes. Meanwhile, the assessment of the process is oriented towards the assessment of causal mechanisms, while evaluation of the results are focused on the evaluation of the results processed according to the specific indicators.

One of the greatest contributions to the qualitative research strategy, as the assessment methodology evolved from the works of Patton (2003). According to Patton (2003), applying qualitative research strategy evaluation is characterized by: inductive methods of data collection, interpretation and presentation; a holistic approach to data generation, analysis, interpretation and naturalistic approach, which reveals that the researcher does not seek to control the context and the participant(s) of the research.

Scientific studies reveal that when the object of the research or part of it are assessed for specific aspects, the most frequently used method is expert estimation method (Hughes, 1996; Rosqvist, 2003). Expert estimation method is described as the summarized opinion of a group of experts, received from applying professionals - experts - knowledge, experience and intuition. Meanwhile, the expert estimation procedure is one that allows coordination and synchronization of individual expert opinions that reach a joint decision (Augustinaitis et al., 2009). So definitely, expert evaluation methodology is based on the assumptions of interpretivism epistemology.

Conclusions and future research

The choice of social research paradigm extreme epistemological position for development of future scenarios, determines the methods, applied in scenario development process.

Systematic and comparative analysis of the scientific literature has revealed that, despite the fact that the intuitive scenario development techniques do not use interpretivism perspective, scientists in their works describe methods used and those methods fulfill assumptions of interpretivism epistemology position. In order to predict future contingency, optimal decision is to use Delphi, an interview or strategic foresight workshop methods. The content of intuitive scenario is developed with the help of creative writing techniques, and their quality is assessed through expert estimation methods.

After justifying methods, which fulfill interpretivism epistemology position ontological, axiological and methodological assumptions, it is important to verify / determine whether the application of these methods conform according to the criteria of the qualitative research methodology.

Taking into account that intuitive scenarios are based on interpretation, one can argue that they are characterized by hermeneutic qualitative research methodology. Hermeneutic qualitative methodology is focused on the generation of data, the interpretation of experiential information, emphasizing contextuality and situationality of knowledge. This is one of the fundamental qualitative research methods, which content includes discourse analysis, and which is inseparable from text, conversations considered as chats and analysis of human actions. In order to check whether the methods discussed in the article are adequate for intuitive scenario creation, it is important to check the scenario in accordance with the criteria set for hermeneutical methodology based qualitative research (subjectivity, reliability, validity, universality, accessibility and feasibility).

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*TRUST AND AREAS OF COOPERATION BETWEEN COMPANIES AND
INSTITUTIONS OF SCIENCE*

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Abstract

Purpose of the article Identification of barriers to cooperation between the worlds of business and science is important from the point of view of measures to be taken in order to overcome them. There are reports available in Polish works on these issues at national level, but there is no analysis devoted to individual provinces, including the Podlaskie province. It was particularly important to recognize the issue of relations of trust and cooperation between businesses and institutions of science in the perspective opportunities for development of cluster structures.

Methodology/methods The study included 381 companies. Identification of the factors influencing trust and cooperation was based on the analysis of literature and interviews with experts. Statistical calculations were made with the use of StatSoft STATISTICA.

Scientific aim The aim of the analysis carried out in this text was to identify the relations between trust and cooperation of companies with science institutions as well as the areas of cooperation between business and science sectors.

Findings The analysis showed that the dominant percentage of the studied companies have not previously undertaken any cooperation with the institutions of science. Little optimism can be seen in assessing the level of interest of the researched companies in cooperation with the science sector in the near future. Empirically confirmed was the positive correlation between trust and cooperative actions of the surveyed companies and institutions of science.

Conclusions From the perspective of the possibility to create cluster links, as supports for innovation in north-eastern Poland, the obtained results are not optimistic. We should therefore seek to initiate cooperation between enterprises and institutions of science. On one hand, we must break the stereotype of a scientist as someone completely detached from the reality, who conducts unnecessary research and on the other hand we must strive to improve entrepreneurs' awareness of the need for learning throughout life, complement their knowledge and show them the specific benefits of lifelong learning.

Key words: enterprises, sphere of science, cooperation, barriers to cooperation, trust, clusters.

JEL Classification: L22, L26, M14

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Introduction

Acquisition of new technologies and knowledge needed to run a modern business become the foundation of modern entrepreneurship. Innovation is seen as a vital link to improve productivity and economic growth. It is all about innovation based on a solid foundation, created on the basis of knowledge, education, research and development activities (Strategia Rozwoju Nauki ..., 2008).

The level of knowledge commercialization and implementation of innovation depends on many factors, among which the important role is played by the intensity and quality of relationship between science and business. The end result in the form of creation, implementation and application of innovation on the market depends on the will for cooperation between entities in these spheres (Okoń-Horodyńska, 2004).

Identification of barriers to cooperation between the spheres of business and science is important from the point of view of measures to be taken in order to overcome them (Bariery współpracy przedsiębiorstw ..., 2006). It should be noted, however, that some of the factors that can positively affect the high inclination to cooperate by companies from one area do not have to be as important for actors at the other end of the country or the community of states. Therefore research carried out not only at the national but also regional levels seem to be important (Szostak, 2008).

Although among the available Polish studies there are reports on these issues at the national level, there is almost no analysis of this scope devoted to individual provinces, including the Podlaskie province, which takes one of the last places in innovation rankings. This text will help to fill this gap to a certain extent.

1 Review of the literature

In all the EU member states development and absorption of innovation, which is one of the pillars of the economy based on knowledge, constitute the key elements of the policy of economic and social cohesion (Barska *et al.*, p.49). However, taking into consideration the measure of the percentage of companies that implement innovations a major divergence between the Member States can be clearly noticed. Poland on this list unfortunately ranks in the one before last position (only 23% of enterprises are innovative enterprises) (Innovationsstatistik, 2015). In 2009-2011 innovatively active industrial enterprises accounted for only 16.9% and service companies for 12.3% of their total number (Działalność innowacyjna ..., 2012, p. 7). Polish companies rarely undertake to carry out research and development. The value of the EBRD index proves that, which, despite a slight increase to 0.23% of GDP in 2011, remains at a low level. Expenditures on innovation activities in enterprises are designed mostly for the purchase of machinery and equipment. Only 13.3% of resources is spent in industrial enterprises and 13.6% in the service sector to conduct research and development (Bromski, 2013). It might be worth mentioning that among the member countries of the European Union the most active cooperation between the worlds of business and science is maintained in countries such as Lithuania - 56% of companies, Slovenia- 47%, or Finland- 44% (Juchniewicz, 2008).

The increase of innovativeness of Polish enterprises is necessary so that they can be competitive in the market, both domestic and international (Ejdys, 2014; Ejdys, Ustinovicus and Stankevičienė, 2015). However, it appears to be impossible without undertaking cooperation with other actors, as the development more and more often depends on the relations between them and the other participants in the market in which they operate (Grudzewski and Hejduk, 2001, p. 55). Combining the potentials of cooperation partners and using them in reaching common goals is the key to the gradual development, as jointly developed projects generally have a much better chance of success than individual activities (Juchniewicz, 2007, p. 100). Among the possible areas of cooperation between different actors, including those competing with each other, are clusters (and other relationships of a network nature). For years the European Commission has emphasized the creation of clusters, and in the new 2014-2020 financial perspective especially their development, believing that they are the driving force behind innovation and growth (Wasiluk, 2008; Kaźmierski, 2014). A new way of creating competitiveness, which gives the concept of clusters, is an effective way of searching for synergies arising from the cooperation between the different entities in the so-called triple helix. This cooperation refers to the spheres of business, science and public authorities.

Low involvement of enterprises in R&D activities should be seen partly in poor cooperation with the science sector. This is confirmed by the studies. Diagnosis of cooperation degree included in the Innovative Economy Operational Programme points out many reasons for this state of affairs, among others, too little interest in innovative solutions and lack of knowledge on the part of entrepreneurs (Program Operacyjny ..., 2006).

In the specialist literature the authors also point to the lack of, or low level of trust between the two spheres as a barrier to the development of cooperation between them. According to many researchers (Deutsch, 1958; Blau, 1964; Barber, 1983; Zucker, 1986; Fokuyama, 1995; Cook, 2001; Sztompka, 2007; Gilbert, 2010) without trust no social or economic systems will operate, as it is a kind of lubricant (Arrow, 1974, p. 23). Mutual trust in

business relationships promotes cooperation and conversely (Clases, Bachmann and Wehner, 2003; Gilbert, 2007; Gilbert and Behnam, 2013). A positive correlation between trust and cooperative action has been empirically, clearly identified (Nooteboom, Berger and Noorderhaven, 1997; Eggs, 2001). Cooperation is often possible only thanks to trust (Tsai, 2000). Trust overcomes the limit of cooperation risk (Malhotra, 2004). However, as noted by G. Möllering and J. Sydow (2004, pp. 65-93) it is not completely settled, what role is played by trust in enterprise network connections. Whether it is a special, central role in creation and development of relations or only a secondary one (Chiles and McMackin, 1996).

Innovations are essential for the development of enterprises and determine their competitiveness and superiority over others. Work on innovations and their implementation are often determined by a real and effective cooperation between science and business sector, which allows for the full use of the potential of both spheres. Therefore, identification of barriers to the development of cooperation between them is an important step towards improving the existing deficit in this area.

2 Methodology of the research

Given the above theoretical considerations, the author of this text recognized it important to examine the question of relationship between trust and cooperation between business entities and institutions of science in the perspective of opportunities for development of cluster structures (and possibly other networks) in Podlaskie province. The research problem was formulated in the form of the following research questions

- 1 How do respondents assess the current level of trust in their companies to the institutions of science?
- 2 How do respondents assess the level of existing cooperation of their companies with the institutions of science?
- 3 What is the degree of interest of the surveyed companies in closer cooperation with the institutions of science in the near future?
- 4 To what extent do various factors influence the current level of cooperation between the respondents' companies and institutions of science?
- 5 To what extent positive changes in various factors may contribute to the improvement of cooperation between the respondents' companies and institutions of science in the near future?

Presented herein analysis are based on the results of extensive research (the author of this text is a member of the research team) carried out in the framework of an international research project, conducted in the framework of an agreement between the Polish Academy of Sciences and the National Academy of Sciences of Belarus (in 2014-2016) „*Readiness of enterprises to create cross-border networking*”. Quantitative studies, carried out in late 2014 and early 2015 (the fourth quarter of 2014 and the first quarter of 2015), included 381 industrial enterprises and construction companies, whose headquarters were in the region of Podlaskie province. The survey was addressed to the owners or members of senior management. Identification of the factors influencing both the trust and cooperation was based on the analysis of literature (Strategia Rozwoju Nauki ..., 2008; Nauka w Polsce ..., 2013; Okoń-Horodyńska, 2004; Bariery współpracy przedsiębiorstw ..., 2006; Szostak 2008), and it was the result of discussions with experts from both the scientific community and business. Evaluated were the following areas of cooperation:

- possibility of implementing joint research and development projects;
- access to the research infrastructure;
- help in solving technological problems;
- help in solving organizational problems;
- transfer of knowledge;
- help to improve the qualifications of employees;
- previous experience in cooperation.

The respondents assessed the phenomenon in a seven-level scale. Statistical calculations were made with the use of StatSoft STATISTICA Version 12.5.

3 Analysis of the results and discussion about them

The obtained results allow for a conclusion that the surveyed companies have medium confidence in the institutions of science and the diversification of their evaluations is apparently small (Table 1). The predominant proportion of respondents (99 entities) rated it at level 4. The median simultaneously indicated the same value. Interestingly, the respondents also evaluate low the level of existing, current cooperation. As many as 134 surveyed companies so far have not undertaken any cooperation with the research and development institutions.

In the specialist literature the question is often addressed of whether low level of trust is the result of low level of cooperation, or is it vice versa, and therefore poor cooperation entails a low level of trust. The correlation of Spearman's ranks conducted in regard to the respondents' assessments leads to the conclusion that an increase in the level of confidence is accompanied by an increase in the average value of assessing the level of existing cooperation between the studied entities and institutions of science. The strength of correlations, however, is moderate. It can be concluded, referring to deliberations conducted in the first section of this text, that trust plays some role in creating cooperation between the researched companies and institutions of science, but it can not be attributed to play the crucial role in these relationships.

Little optimism can also be observed in assessing the level of interest of the surveyed companies in cooperation with the science sector in the near future. However, Spearman's ranks correlation indicates a significant relationship between these two assessments. The higher the researched firms assessed the current level of contacts with research and development institutions the higher level of readiness for its strengthening in the future they demonstrated in their declarations.

Table 1 Trust and cooperation of the surveyed companies with the institutions of science

Specification	\bar{x}	M_e	D	n_D	s	v
Level of trust	3,69	4,00	4	99	1,45	39,24
Level of cooperation	2,51	2,00	1	134	1,56	62,05
Level of interest in strengthening cooperation within the next 2-3 years	3,20	3,00	3	88	1,66	52,00
Correlation of Spearman's rank						
Assessment of the level of trust and cooperation						0,481472
Assessment of the current level of cooperation and possibilities of its strengthening in the future.						0,672574

Source: own study.

What makes an entrepreneur looking for contacts with the world of science? It turns out that these are primarily: help to improve the qualifications of employees, assistance in solving technological problems and transfer of knowledge (Table 2). It seems that universities are good in this role. In modern society they are not only research centers that constitute only the teaching facilities, but they are also institutions that provide training process of students and professionals, in short the future people of the economy. However, they acquire their essence only when the conditions for the use of intellectual potential, knowledge and ideas of academics are created.

Low assessment of the impact of past experience on the intensity of cooperation is the result of that, as mentioned above (Table 1), the majority of respondents (134) in general so far have not undertaken such cooperation. On the other hand ignoring the possibility of implementation of joint research and development projects may be due in part to the stereotype of the scientist as a person detached from reality, creating only theories. And what is theoretical for most entrepreneurs is automatically – impractical.

Interestingly, help in solving organizational problems as a platform for undertaking cooperation between science and business was also low-rated. On one hand this can be due to a lack of belief of many entrepreneurs as to the substance of the impact of these problems on the efficiency of their businesses operation, and therefore if something is not important it's not worth investing financial resources and time in solving it. While on the other hand, many members of the top management are convinced that their own knowledge is sufficient for solving such problems.

It should be noted that the dominant for all the factors stayed at level 1, which means the complete absence of effect of the analyzed factor on the level of the current cooperation. Differentiation of the respondents' assessments in this regard remained at a moderate level.

The respondents were asked to assess the impact of positive changes in the various factors on the improvement of their level of cooperation with the institutions of science in the near future (Table 2). It should be noted that for all the factors that assessment was higher than the assessment of the impact of the identified factors on the current state of cooperation, wherein the variation of the assessments still remained at a moderate level. As in the previous case, the highest assessments were attributed to the positive impact of changes in the area of help to improve the qualifications of employees, solving technological problems and transfer of knowledge. No previous cooperation with institutions of science was reflected also in the low assessment of the

effect of a positive experience in the future. If something is not known, it is difficult to appreciate its value in the future.

Table 2 Assessment of the impact of individual factors on the current and future cooperation between enterprises and institutions of science

Factors influencing the level of cooperation	\bar{x}	M_e	D	n_D	s	V
Current level of cooperation						
Possibility of implementing joint research and development projects	2,80	2,00	1	125	1,75	62,61
Access to the research infrastructure	2,92	3,00	1	118	1,74	59,52
Help in solving technological problems	3,15	3,00	1	100	1,71	56,90
Help in solving organizational problems	2,93	3,00	1	111	1,71	58,33
Transfer of knowledge	3,03	3,00	1	108	1,75	57,72
Help to improve the qualifications of employees	3,39	3,00	1	88	1,84	54,26
Previous experience in cooperation	2,92	3,00	1	106	1,68	57,67
Impact of positive changes in factors on improvement of cooperation in future						
Possibility of implementing joint research and development projects	3,36	3,00	1	83	1,86	55,22
Access to the research infrastructure	3,49	4,00	1	76	1,83	52,43
Help in solving technological problems	3,77	4,00	4	78	1,87	49,59
Help in solving organizational problems	3,55	3,00	1	69	1,88	52,97
Transfer of knowledge	3,68	4,00	4	74	2,39	64,84
Help to improve the qualifications of employees	3,99	4,00	5	72	1,88	47,01
Previous experience in cooperation	3,16	3,00	1	80	1,69	53,55

Source: own study.

There is a high positive correlation between the assessment of the impact of all identified factors on current and future cooperation between the researched companies and institutions of science (Table 3). Spearman's ranks correlation conducted in regard to the respondents' assessments support the conclusion that the growth of assessments of the level of individual factors impact on the current level of cooperation is accompanied by an increase in the average value of assessing the level of impact of positive changes in these factors on the establishment of cooperation in the future. Particularly high connection occurs in case of the experience of previous cooperation. Therefore, it can be concluded that the positive history of previous relationships results in a kind of habit and conviction as to the reliability of the partner regarding the compliance of obligations, as was indicated by, among others by S. Braun (2010, p. 229).

Table 3 The correlation between the assessment of the impact of individual factors on the current and future cooperation between enterprises and institutions of science

Spearman's ranks correlation for the assessment of the impact of individual factors on current cooperation and possibilities of its strengthening in the future resulting from positive changes in these factors	
Possibility of implementing joint research and development projects	0,683753
Access to the research infrastructure	0,694548
Help in solving technological problems	0,643645
Help in solving organizational problems	0,647524
Transfer of knowledge	0,700059
Help to improve the qualifications of employees	0,639314
Previous experience in cooperation	0,726371

Source: own study.

Initiating such cooperation should therefore become the aim. On one hand, we must break the stereotype of a scientist as someone completely detached from the reality who conducts unnecessary research and on the other hand we must strive to improve entrepreneurs' awareness of the need for learning throughout life, complementing their knowledge and show them the specific benefits of lifelong learning. Opening up to the new does not mean that something was done badly in the past, but it means coming to terms with the maxim that nothing lasts forever. What was good yesterday or is good today may not be good in the future. Changes in the technology environment and customer tastes occur so quickly that standing in one place and "cashing" of the current success really means regression. No specialist knowledge on the introduction of new technologies, products or organizational solutions will lead to the growing gap between the entity and the rest of the environment.

Conclusion

The analysis conducted in this text allowed to find answers to the research questions. The positive correlation between trust and cooperative actions of the surveyed companies and institutions of science has been empirically, clearly confirmed. This relationship, however, is moderate. A strong correlation can be observed in case of assessing the level of current cooperation and readiness to strengthen it in the future.

The carried out analysis showed that the dominant percentage of the surveyed companies have not undertaken any cooperation with the institutions of science so far. Slight optimism can also be seen in assessing the level of interest of the surveyed companies in cooperation with the science sector in the near future. However, the higher the surveyed firms assessed the level of current contacts with research and development institutions the higher level of readiness for its strengthening in the future was demonstrated in their declarations. These results, unfortunately, fit into the picture of the situation described in the report of 2006 " Bariery współpracy przedsiębiorców i ośrodków naukowych" (2006). Although a decade passed since its publication, basically little in this regard has changed, despite several attempts made by successive governments, making new reforms, creating special conditions for the development of cooperation between the sectors of business and science. The report shows, among others, that 40% of entrepreneurs have not ever tried to use the assistance of scientific institutions, although they were aware of the possibility of undertaking such cooperation. 56% of companies simply have not seen the need to start such cooperation. Similar results are also in terms of their declaration for cooperation in the future. The vast majority of those who have so far cooperated with the science sector also declared it in the future (95%), while in the second group, the percentage was less than half (44%).

From the perspective of the potential to create cluster links as supports for innovation in north-eastern Poland, the obtained results are not optimistic. It should be noted that participation in these structures based on voluntary and not coercive. It should be noted that participation in these structures is voluntary and not obligatory. Therefore, the important factor, and it's not small, that influence their development is certainly the willingness of enterprises to cooperate with, among others, institutions of science. Cluster development in the Podlasie province, including cross-border clusters (Wasiluk and Daniluk, 2013), is a great opportunity to improve the competitive position of Podlasie in relation to other regions of Poland.

We should therefore seek to initiate cooperation between enterprises and institutions of science. On one hand, we must break the stereotype of a scientist as someone completely detached from the reality who conducts unnecessary research and on the other hand we must strive to improve entrepreneurs' awareness of the need for learning throughout life, complementing their knowledge and show them the specific benefits of lifelong learning. Opening up to the new does not mean that something was done badly in the past, but it means coming to terms with the maxim that nothing lasts forever. What was good yesterday or is good today may not be good

in the future. Changes in the technology environment and customer tastes occur so quickly that standing in one place and "cashing" of the current success really means regression. No specialist knowledge on the introduction of new technologies, products or organizational solutions will lead to the growing gap between the entity and the rest of the environment.

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**SECTION 9
TRENDS OF ACCOUNTING AND REPORTING IN PUBLIC SECTOR
AND NGOS**

*THE EFFECTIVENESS OF PUBLIC FINANCES PROVIDED TO PUBLIC
LIBRARY SERVICES IN THE CZECH REPUBLIC*

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Abstract

Purpose of the article This article aims to provide an overview of the efficiency of allocated funding for the provision of public library services. The article deals with monitoring the impact of individual variables on the dependent variable - the amount of return on investment (ROI).

Methodology/methods The article works with the values obtained in the project "We will calculate ROI," which took place in 2015 in the Czech Republic in cooperation with the Municipal Library in Prague and Pardubice University with the support of the Ministry of Culture of the Czech Republic. Data obtained in this project was drawn up by the cost-benefit analysis. The impact of individual determinants of the amount of ROI will be assessed by multiple regression analysis and cluster analysis.

Scientific aim The article aims to determine, depending on the amount of selected indicators ROI. Estimates show a significant determinant which ones are important and have an impact on the value of ROI. The influence of regional indicators and values regarding specific libraries.

Findings The article accounted the ROI of 36 libraries in the Czech Republic and their comparison for the years 2012 and 2014. Libraries were divided into groups based on similarity of values of significant indicators.

Conclusions This is the first research in the Czech Republic, which was made in measuring the value of public libraries, which were determined to ROI on specific libraries for such a large sample of observations. Monitoring the impact of regional indicators points to the fact that the amount of the ROI does not affect the location of the library, the library or success does not depend on the county in which the library is located. Libraries can be divided into groups that differ significantly and according to this distribution can select different methods of public funding.

Keywords: public library, public services, efficiency, public investments, cost-benefit analysis.

JEL Classification: H41, H21, D61

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Introduction

The current situation in public finances calls for austerity measures and conscientious handling of public funds. As part of this trend is to reduce the cost of some public services. Public library services among them also ranks but just reducing expenditures on these services is debatable topic.

Public libraries serve for whole society and they have impact on personal development and knowledge potential of the population throughout the country. The consequence of the development of science and technology, mobile applications and the Internet are often related to searching for information on replacing these modern methods instead of borrowing books and visiting libraries. It is because of these facts, libraries are forced to provide other, additional or cultural services to visitors. Due to these phenomena leads to reflection on the efficiency of the services provided by public libraries, over their economy and efficiency, the amount of invested funds from public budgets.

1 Valuation of public services

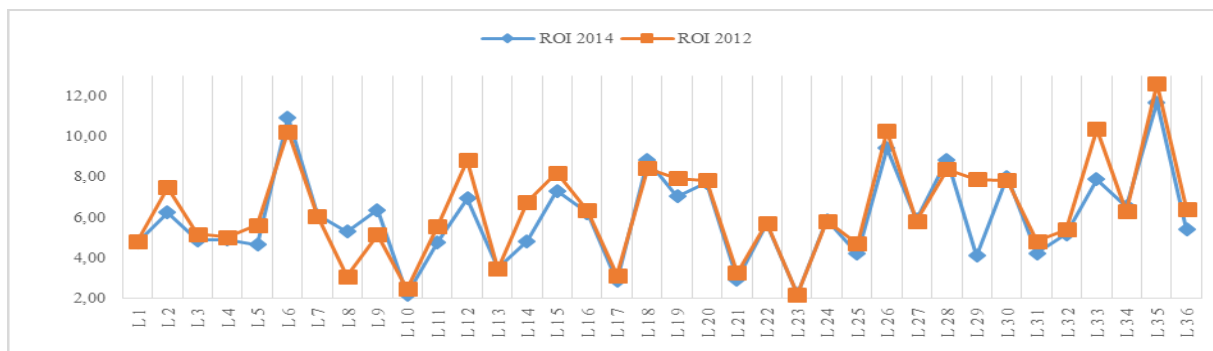
Many international studies show that there are appropriate procedures that can define the output of public service and appreciate its usefulness for its users. Economic valuations of public libraries begun carried out more frequently in recent times. In the middle of 1990s, researchers (Aabø, 2009; Holt et al., 1999) began to study the benefits of public libraries, measure their value, and ask users for their opinions regarding their performance. In 1990's came a new methodology, taking a broader view of the value of libraries and seeking to establish their value to stakeholders and clients. It was used the Balanced scorecard methodology, which enabled to set goals to split hard numbers under consideration to determine which services should be changed, and also to consider process improvements (Kaplan & Norton, 1996, Walsh & Greenshields 1998). The high point of these approaches for evaluation of public library services can be seen in the current studies of value using return-on-investment and contingent valuation. These methods are generally conducted to determine the economic benefit to citizens of public libraries and the economic benefit of particular services, such as national union catalogues and bibliographic services (Missingham, 2005).

Several methods can be used to measure library value. Methods of economic evaluation of non-market goods or effects, based on consumer's surplus, are mainly three: the Travel Cost Method, the Hedonic Price Method and the Contingent Valuation Method (Marella & Raga, 2014). The problem with these methods is again difficult measurability of outputs or results (Modell & Wiesel, 2008) and the need for direct interaction with the consumer. Other methods replicate practices commonly used in the private sector, as an example is the return-on-investment (Kaufman & Watstein, 2008). The goal is to provide a clearer picture of the benefits and costs of service producer. These methods can be used both to analyse the efficiency of individual providers and for the region or the entire system of the selected type of service in the state (McIntosh, 2013).

Many economic studies of the ROI of public libraries use contingent valuation (CV), which was established in 1947 (Cumming & Taylor, 1999), to provide an estimate of the value of their services when users receive those services for free. CV surveys ask users what they would be willing to spend in time and money to get access elsewhere to the information resources they recently received from the library. This method allows researchers to calculate the average user-assessed value of access. The contingent valuation method is a widely used nonmarket valuation method especially in the areas of environmental cost (Venkatachalam, 2004), health care (Klose, 1999), public libraries (Stejskal & Hájek, 2015). CV principle is the basis of a method that is still used today in practice – contingent valuation method (CVM). The CVM is a survey-based technique generally accepted as a meaningful tool used to estimate the value of various nonmarket goods (Lee & Chung, 2012), it reflects altruistic motivation, a major component of non-use value in contingent valuation. This method gained popularity after the two major non-use values, namely, option and existence values have been recognised as important components of the total economic values (Venkatachalam, 2004). For methodology of contingent valuation see (Russell et al., 1995; Wedgwood & Sansom, 2003). Results from contingent valuation studies are used for many purposes in benefit–cost studies (Carson, 2012; Marella & Raga, 2014).

2 Data obtaining

The cost-benefit analysis was chosen to calculate the values for individual libraries in the Czech Republic. The research was conducted in 2015 in cooperation with the Municipal Library in Prague and University of Pardubice with the support from the Ministry of Culture in the Czech Republic. It was attended by 40 libraries, 36 libraries of which were returned and processed the data that was needed to determine the outcome of return on investment. Individual libraries are represented by all regions of the Czech Republic, except of the Ustecky Region. Data of libraries was monitored between the years 2012 - 2014. Comparison of values was conducted between the extreme years (see Fig. 1).



Legend: L1 – L35 means libraries which are more describe in table 2 and table 3, L36 is city library from NUTS CZ05.

Source: Own research

Figure 1: Comparison of the return on investment of libraries in the years 2012 and 2014

The libraries that participated in the research are shown on the X axis. They are named according to the cities in which they are located. The values of ROI are situated on the Y-axis. In 2012, they moved in the range of 2.18 to 12.62, and in 2014 in the interval from 2.19 to 11.69. It is obvious (see Fig. 1) that values of ROI in 2014 reported in many libraries lower values, within two years are reported to reduce the interval ROI nearly unit (0.93). Figure 1 indicates the decreasing trend of ROI values.

3 Analysis

The next part of the article will be working with the latest data. Regression analysis will be performed to determine the impact of various determinants on the level of ROI by using data for the year 2014. Cluster analysis will be used in the article to show what groups can divide the library according to selected determinants. Analyses are working with data from 35 libraries of the Czech Republic, the city library L36 was excluded from the analyses because of lack of data. All statistical analysis used in the article were conducted in software Statistical10.

In analysis were used selected determinants shown in Table 1 with their main characteristics and their minimum and maximum value, which were found in the surveyed libraries.

Table 1 Selected determinants and their main characteristics value

Determinant	Main characteristics	MIN / MAX value	Units
Number of inhabitants in region	population in the selected region	299293 / 1315299	person
Unemployment rate in region	the proportion of the unemployed to all persons able to work	5,7 / 9,8	percent
Average gross wage in region	the share of wages per employee	21910 / 25570	CZK
Number of library fund	the amount of different kind of books which has library for their users	17250 / 2158723	pieces
Number of events in library	various cultural events such as author readings, book signings, events for children and youth, themed events	36 / 4060	pieces

Source: Own research

3.1 Correlation analysis

For the needs of implementation of both types of analyzes was the first step necessary to make a correlation analysis. Spearman's test showed that individual determinants have not between them relationship. Data are not correlated and selected determinants may be used in the analyzes.

3.2 Multivariable linear regression model

For analysis of the relationship between variables were used the multivariable linear regression model. This model was designed to examine the relationship between value of the return of investment (dependent variable

Y_i) and selected determinants (all are independent variables, see in table 2), which can be represented by an equation of the form:

$$Y_i = \beta_0 + \beta_1 x_{i1} + \beta_2 x_{i2} + \dots + \beta_k x_{ik} + \varepsilon_i \quad (1)$$

where $i = 1, 2, \dots, n$, Y_i is the i measurement of the dependent variable, β is regression coefficient known as the intercept and the slope respectively, x_i is the i measurement of the independent variable and ε_i is its associated error term (random failure).

Table 2 Parameter estimates of regression model for selected determinants

Determinant	Parameter estimate
Number of inhabitants in region	0,945850
Unemployment rate in region	0,728630
Average gross wage in region	0,995389
Number of library fund	0,009801**
Number of events in library	0,040910*

Legend: ** significant at $p < 0,01$, * significant at $p < 0,05$.

Source: Own research

The correlation coefficient generated model reached the value of 0,5556 and a coefficient of determination was 0,3087. Important value is also a p-value, which reached values 0,046.

Table 2 shows that regional determinants are insignificant and determinants in relation with library are significant values. It means that value of ROI is highly dependent on: (1) number of library fund; (2) number of events made by libraries. For this reason, these indicators were selected for further analysis in order to form groups of libraries - cluster analysis.

3.3 Cluster analysis

For further processing of data was chosen cluster analysis, which encompasses a number of different algorithms and methods for grouping objects of similar kind into respective categories. The aim of cluster analyses is to organize observed data into meaningful structures, to develop taxonomies according to different value of indicators

For measurement of the distance was chosen Euclidean distance, which is the most commonly chosen type of distance. It is the geometric distance in the multidimensional space which has form:

$$\text{distance}(x, y) = \left\{ \sum_i (x_i - y_i)^2 \right\}^{1/2} \quad (2)$$

The number of 35 libraries was monitored by the analysis (see in table 3) which have been aggregated into groups by the impact of significant indicators of previously conducted multivariable linear regression analysis, therefore, affect the value of return on investment, number of library events and number library fund.

Table 3 Groups of libraries and their description used in analysis

I. group			II. group		
Code	Library type	NUTS 2 code	Code	Library type	NUTS 2 code
L1	CL	CZ02	L10	SL	CZ05
L2	CL	CZ05	L16	SL	CZ05
L3	CL	CZ05	L17	SL	CZ07
L4	CL	CZ03	L21	SL	CZ08
L5	CL	CZ03	L23	SL	CZ03
L6	CL	CZ08			
L7	CL	CZ08			

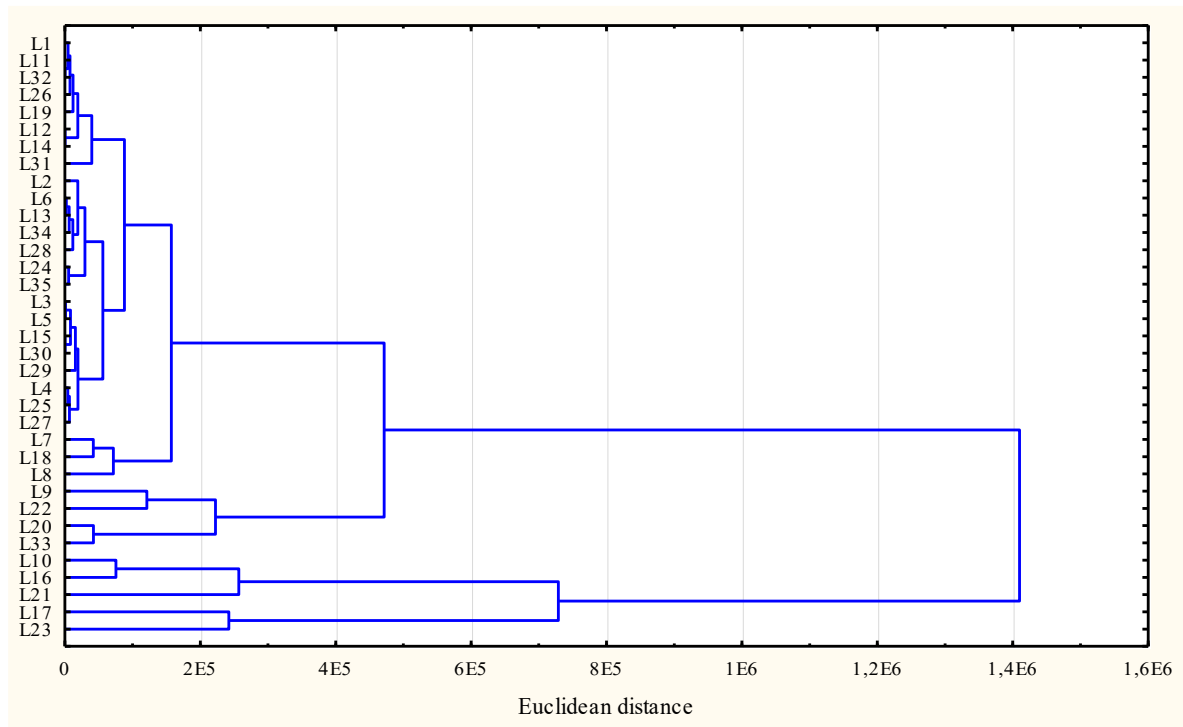
L8	RL	CZ06
L9	CL	CZ05
L11	CL	CZ08
L12	CL	CZ04
L13	CL	CZ04
L14	CL	CZ05
L15	CL	CZ08
L18	CL	CZ08
L19	CL	CZ08
L20	CL	CZ08
L22	RL	CZ05
L24	CL	CZ07
L25	CL	CZ02
L26	CL	CZ02
L27	CL	CZ03
L28	CL	CZ03
L29	CL	CZ08
L30	CL	CZ07
L31	CL	CZ03
L32	CL	CZ02
L33	CL	CZ06
L34	CL	CZ03
L35	CL	CZ05

Legend: Library type: CL = city library, RL = regional library, SL = scientific library.

Source: Own research

The results of cluster analysis are shown in Fig. 2. Libraries are shown on the Y axis (L1 - L35), the distance clustering on the X axis. Hierarchical data indicates the formation of two groups of libraries. The first group consists of all city and county libraries. The second group is represented only by scientific libraries.

Cluster analysis divided the libraries into the two groups that are distinctly different. City and county libraries in group 1 have a considerably lower number of books, employ fewer than a third of workers than research libraries (group 2).



Source: Own research

Figure 2: Distribution of libraries into groups based on selected indicators

Table 4 describes the differences between groups of libraries. Despite the lower number of registered users, libraries in group 1 have their operations more effective results. One invested Czech crown will bring the value of 6.00 Czech crown for society. The second group represented by scientific libraries organize less events for society and for users. The number of books per capita in the city and county libraries belongs 4.58 books, unlike the first group, where the number of library books is almost eight books for each person in the city (7.81). The value of ROI in scientific libraries value is 2.86, which is half less than the first group.

Table 4 Descriptive characteristics of examined library groups

Indicators	I. group	II. group
Number of library collection	128 052	1 432 124
Number of library events	380,50	264,00
Number of library employs	21,98	79,20
Number of book loans per capita in the city	7,81	4,58
Number of registered users	4 251	13 794
Value of return-on-investment	6,00	2,86

Source: Own research

4 Discussion

From the results of return on investment analyses in 2012 and 2014, we can see that there are changes in these values in individual years, while there is a recession. At the same time there is a tendency to reduce the finances that are provided from public sources. For these purposes it is necessary to find a method of evaluation of public libraries and prove whether their activities are effective or not. Cost benefit analysis method allows monitoring and examine in detail of each library management and reflect on their own profitability.

From the regression analysis clearly shows that the impact of regional indicators does not affect the amount of ROI and it means that the effectiveness of the libraries not depend on its location. The greatest effect was observed in a variable amount of library collections and the number of events organized by the library. These

variables were also used for cluster analysis, which divides the 35 libraries into two groups. The first group will cover all city and regional libraries with a total of 30 libraries. In the second group is situated only research libraries in the number of five institutions. This division means in practice to apply different approaches to their financing and management, to look at them in terms of their specific needs and operations.

Conclusion

Findings of the article are: (1) comparing the ROI values between 2012 and 2014; (2) regression model and finding the positive impact of library collections and the number of events held at the library on the amount of ROI; (3) cluster analysis was created and the result divided libraries into the groups.

The article shows the fact that it is possible to determine the value of the effectiveness of individual libraries in the Czech Republic and perform a comparison between them. The influence of individual variables, whether local values or values regarding specific library management institutions. Based on the similarity of data libraries they were divided into groups and these data can be used to create a taxonomy of approaches to their financing in order to increase efficiency.

This is the first research on the territory of the Czech Republic, who valued the ROI of 36 libraries in the Czech Republic and provides a unique microeconomic analysis of data relating to the field of publicly provided services. Evaluation of selected indicators showed that the regional indicators do not affect the amount of ROI of and therefore on the economy of libraries.

Recommendations for further analysis is create detailed examination of the determinants and their impact on the value of ROI, also to define the precise characteristics of each group of libraries to enable a specific approach in the management of libraries and enhance their effectiveness.

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**SECTION 10
PUBLIC FINANCES, TAXES AND CHALLENGES FOR LAW**

*TAX REVENUE PREDICTION AND STRESS TESTING MODEL BASED ON
THE MACROECONOMIC ENVIRONMENT OF THE SLOVAK REPUBLIC*

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Abstract

Purpose of the article The primary goal of this paper is to construct a tax forecasting model based upon a macroeconomic environment and applying different macroeconomic scenarios, a baseline scenario of economic forecasts and severe depression (economic downside), and estimates of the impact on the tax amount collectable. The model is built upon the data of the Slovak economy and tax collection, where particular tax categories were chosen as endogenous variables and indicators of macro environment as exogenous variables. In our opinion, the main contribution of this paper is in tax collection stress testing, where we predict potential tax incomes in worsening economic environment.

Methodology/methods Tax forecasting model using the Seemingly Unrelated Regression approach with the goal to predict tax collection income in different macroeconomic scenarios, using a baseline scenario and a severe depression scenario.

Scientific aim Tax income prediction and forecast modeling.

Findings The outcome of modeling process are four tax collection models joined together in SUR model based on which we have forecasted possible evolution of tax income in perspective of three years. In general all examined tax types depend on main economic indicators such as GDP, Unemployment, Real Wage, HICP etc., whereas changes in tax legislation had also a significant effect. In baseline scenario is our forecast rather optimistic taking into the consideration optimism concerning economic growth with low unemployment and stable inflation. In case that recession would occur the tax income would decrease significantly comparable to situation in 2007-2009.

Conclusions Tax income forecasting is an essential part of state budget preparation. By construction of the forecasting regression model based on macro environment in different macroeconomic scenarios we have estimated the impact of changes in macro environment on tax collection in conditions of Slovak economy. The main contribution of this paper is a proposal of tax collection stress testing framework where we predict possible tax incomes under worsening economic conditions. The principles applied in regression analysis have its limits and restrictions such as linearity assumption or assumptions of future macro environment evolution in conditions of uncertainty. However we believe that the outcomes of our analysis provided possible directions and volumes in which could tax income collection evolve in different scenarios. A robust budgeting process should in our opinion take into an account not just the current expectation of economic growth, but it should take into an account possible stress situation, since last crisis proved that recession can occur suddenly at any time.

Keywords: Slovak tax system, tax forecast models, Seemingly Unrelated Regression, SUR, stress testing, budgeting process

JEL Classification: E62, C010

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Introduction

Federal taxes represent an essential component of the income part of a state budget. On average, tax revenues cover approximately 70% of the state budget of the Slovak Republic. In recent years, the tax administration in the Slovak Republic has undergone significant changes. Since 2008 national government has been in process of tax and customs reform implementation. The main goal of tax reform has been the unification of tax collection and customs, on technological, organization and procedural levels. Tax reform implementation was finalized in March 2015 when the new central tax information system based on SAP technology was launched.

For all public bodies, as well as tax budgeting and setting processes, it is very important to estimate future tax collections. With this in mind it is important to consider different scenarios of macro environment change because in the case of economic recession a serious decrease in tax collection may arise which affects the income side of state budget and overall condition of the public finances.

The primary goal of this paper is to construct a tax forecasting model based on macro environment with different macroeconomic scenarios, a baseline scenario and a severe recession scenario, and estimates the impact on tax amounts collectable. The model is built upon data of the Slovak economy and tax collection, where particular tax categories were chosen as endogenous variables and indicators of macro environment as exogenous variables. The main contribution of this paper is in the development of tax collection stress testing framework where we predict possible tax incomes in a worsening economic environment.

In the first chapter, we provide the theoretical background of the tax collection system in the Slovak republic as well introducing the existing approaches in the area of tax predictions and forecasting. In the second chapter, we construct an econometric model based upon a Seemingly Unrelated Regression approach. Data for the modeling purposes were retrieved from the reports of Ministry of Finance of the Slovak Republic (2016a, 2016b, 2016c), The Financial Administration of the Slovak Republic (2016a, 2016b), Slovak National Bank (2016a, 2016b) and Statistical Office of the Slovak Republic (2016). In the third chapter we present our findings and forecast possible evolution of tax collection in two economic scenarios, baseline scenario and economic recession. In discussion we evaluate results of our research and offer possible considerations for future research in this area. Finally we conclude.

1 Theoretical Framework and definition of modeling assumptions

Tax analysis and revenue forecasting have become increasingly important tools for government either to undertake reforms of their tax systems or to enhance tax revenues, improve the equity and efficiency of taxes and promote economic growth. Different authors address this topic from various perspectives.

Brender and Navon (2010) in their study examine the sources of uncertainty in predicting government tax revenues in Israel. Authors estimate an econometrical model based on several real and financial macroeconomic variables and identify a significant, stable and highly accurate relation between these variables and tax receipts. Modeling results imply that the forecast error predominantly reflects inaccuracy in the prediction of the explanatory variables and not misidentification of the relations among variables.

Contrary to Brender and Navon conclusions, the accuracy of tax forecasting models is addressed by Hannon et al. (2015) who conducted their research in the conditions of Ireland. Authors argue that the source of forecasting error suggests that the relatively weak forecasting record for Ireland is not simply an inevitable consequence of the macroeconomic uncertainty associated with a small open economy and that careful review of the forecasting process may yield improvement.

Rudzkiš and Maciulaityt (2007) forecast budget revenue from the profit tax using econometric models such as linear regression models and error correction model. In the first stage, authors conduct an econometric modelling of profit tax revenue with the main profit indicators (called the profit tax base) which is performed on the basis of information on profit tax regulation and its changes. In the second stage, authors formed algorithms of forecasting the profit tax base when the main macroeconomic indicators of Lithuanian economy were used as regressors.

Ma and Gamboa (2002) applied a structural single equation forecasting models for corporate income tax, and personal income tax using the example of the Philippine tax system. The author constructs both linear and double logarithmic functions using OLS methods as a regression procedure over the period of 1980-2000. The regressions are used to explain and forecast the variation in tax variables which the author classifies into two groups: (a) variables that reflect the tax base (e.g. GDP) and (b) variables that reflect the changes in the tax structure, tax rates over time (the dummy variables). One of the most interesting conclusions of the study is that income taxation system has a regressive tendency and the re-examination of the income taxation system is warranted, recognizing the number of reforms undertaken in the last 15 years may have distorted the income

taxation system. In this context it is also important to realize that tax forecasting heavily depends on forecasts of economic and financial environment.

Practical implementation of tax forecasting models can be found in papers of several US authors such as Berwick and Malchose (2012) who use ARIMA models to forecast North Dakota fuel tax revenue and license and registration fee revenue. Bloomberg et al. (2013) in document Tax Revenue Forecasting Documentation Financial Plan Fiscal Years 2012-2016 provide a vast range of tax forecasting econometric models which take into the consideration evolution of micro and macroenvironment with the goal to forecast tax revenue for different types of taxes which together build the whole framework of Financial Plan of The City of New York. Similarly Bailey and Pence (2015) are using OLS linear multiple regression for State of Indiana tax income forecasting. The models are built on main macroeconomic indicators such as GDP, Personal Income, Employment, Nominal Wage, etc.

The concept of recession effect on tax income and prevention mechanism in tax budgeting is covered by Deitz et al. (2010) who point on the fact that in the wake of the most recent U.S. recession, both New York State and New Jersey have faced multibillion-dollar budget gaps. To close this budget gaps, states have had to make difficult choices about tax increases and service cuts. In the future, the states might take steps to avert such budget quandaries by establishing “rainy day” funds or restructuring taxes to make them less sensitive to the business cycle.

Boyd and Dadayan (2014) from Rockefeller institute of Government in their report refer to the difference between a forecast and actual results as a “forecast error.” This term is common in analyses of forecasts, whether they be forecasts of the economy, or of the weather, or of state tax revenue. It does not imply that the forecaster made an avoidable mistake or that the forecaster was somehow unprofessional. All forecasts of economic activity will be wrong to some extent, regardless of the expertise of the forecaster or the quality of the tools used. Forecasting errors are inevitable because the task is so difficult: Revenue forecasts are based in part upon economic forecasts, and economic forecasts often are subject to substantial error; tax revenue is volatile and dependent upon idiosyncratic behavior of individual taxpayers, which is notoriously difficult to predict; and tax revenue is subject to legislative and administrative changes that also are difficult to predict.

1.1 Characteristics of Slovak Tax System

A tax is defined by the Oxford Dictionary (2016) as a “*compulsory contribution to state revenue, levied by the government on workers' income and business profits, or added to the cost of some goods, services, and transactions*“. The rules of taxation and also penalties for avoidance are determined by national laws. The Slovak tax system as defined by national legislation consists of following two primary tax categories.

Direct taxes - the tax is paid by the person whom it is imposed, the object of taxation is income or property.

Types of taxes: Personal income tax, Corporate Income Tax, Payroll tax, Real estate tax, Dog tax etc.

Indirect taxes - the tax is included in the price of goods and services.

Types of taxes: Value Added Tax (VAT), Consumption taxes – fuel, alcohol etc.

Various types of taxes fulfill the national state budget differently. In this paper we examine only the taxes which have the most significant impact on the income part of the state budget such as Personal Income Tax paid by Employees (PITE) Personal Income Tax paid by Self-employed Entrepreneurs (PITS), Corporate Tax (CT), Value Added Tax (VAT) and Income Tax Deductions (ITD). First three taxes are paid in the form of monthly or quarterly advanced tax payments and represent approximately 45% of total tax collected volumes. In case of VAT and ITD, these taxes are paid in form of tax payments on monthly or quarterly basis and represent approximately 52% of total tax collected volumes.

1.2 SUR Model Theoretical Framework

For the purposes of forecasting and stress testing the Seemingly Unrelated Regression (SUR) approach was used. In econometrics the Seemingly Unrelated Regression (SUR) proposed by Arnold Zellner in 1962 is a generalization of a linear regression model that consists of several regression equations, each having its own endogenous, dependent variable and potentially different sets of exogenous, independent variables. The seemingly unrelated regression model is a recursive model, which consists of a series of endogenous variables that are considered as a group because they share a close relationship with each other. Each equation is a valid linear regression on its own and can be estimated separately using the Ordinary Least Squares (OLS) method, which is why the approach is referred to as Seemingly Unrelated. The main contribution of the SUR model can be seen in the OLS residuals correlation which can contribute to more efficient estimates of model coefficients in comparison to the simple OLS approach. In this case, there would not be such a correlation of results using the

SUR model as it would be identical with the OLS one. Taking into the consideration the expectations of certain correlations of residuals within particular tax OLS equations, we have decided to test this assumption by SUR model construction.

The regression model takes into the consideration following assumptions:

Linearity - dependence of tax variables from macroeconomic environment is linear in time.

Stationarity – to test stationarity as a supporting method we have used the Adjusted Dickey Fuller Test with Lag(3) and confidence level $\alpha=0.05$. In case of non-stationary variables, the data stationarity was achieved using time series differentiation with LAG ($t - t-3$).

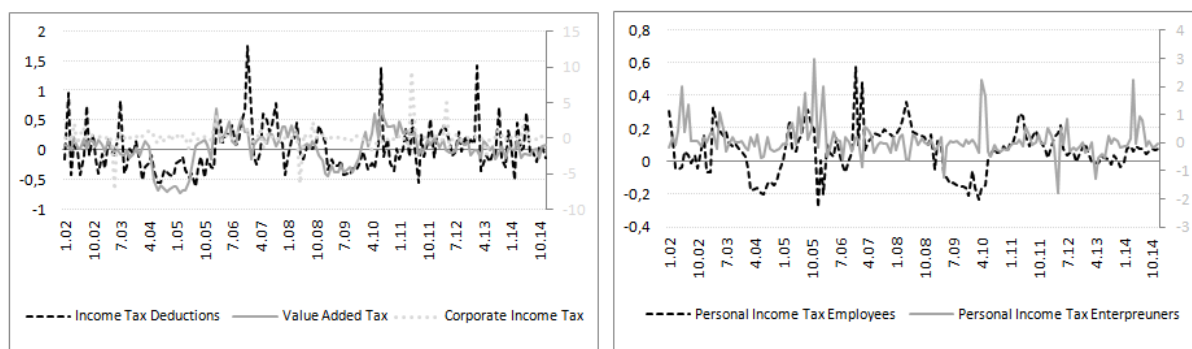
Expected coefficient signs (direction of influence) - all coefficient signs were set according to the estimated economic relationship between particular endogenous(Y) and exogenous (X) variables.

Lead/Lag selection – the regression model is taking into an account Lead (12) and Lag (-12) time series while Lead or Lag was chosen according to expected sign and strongest correlation between particular time series. In general Lead can be interpreted as expectation of future indicator evolution and lag represents time period in which particular change in exogenous indicator will affect the endogenous one.

1.3 Definition of Model Variables

Endogenous (Y) variables

Endogenous variables are defined in 1.1 while in the case of VAT due to data availability and structure only tax collected by customs is taken into the account. The monthly tax time series were constructed as year on year growth of absolute monthly tax collections. For more detail please see Figure1.



Source: Ministry of Finance SR (2016a,b,c)

Figure 1 Evolution of endogenous variables in time

Exogenous (X) variables

Independent variables were chosen with the goal to most accurately reflect the tax environment in Slovak Republic. A relatively large range of explanatory variables were tested. However, not all were proven to be significant. A final list was then produced, namely: Index of Headline Inflation (HICP), Unemployment Rate, Consumption Growth, GDP Growth, Index of Real Wages, Crude Oil Growth, 12 Month Euribor Rate, Import Growth, Balance Services Growth and Investments Growth. Furthermore, two structural changes in legislation were taken into the consideration: the Introduction of equal tax of 19% in 2004 (Dummy variable 2004) and of progressive taxes back again in 2013 (Dummy variable 2013).

1.4 Definition of Macroeconomics Environment Scenarios

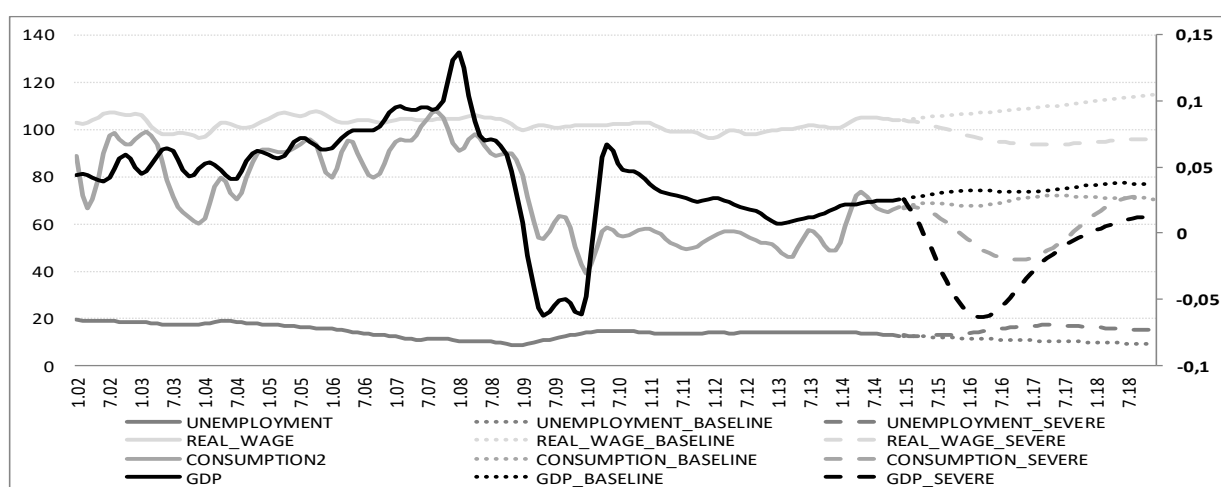
With the goal of achieving a robust state budget, responsible authorities should in the process of developing public budgets and tax collection approaches take into account different assumptions of macroeconomic development. In this context, we have proposed following two macroeconomic scenarios.

A Baseline Scenario – this scenario depicts a baseline scenario of macroeconomic development of the Slovak economy. The forecasts of selected indicators are based on the official data released by the Ministry of Finance of the Slovak Republic and Slovak National Bank. Further, we present a brief summary of forecast macroeconomic development in Slovakia over the period of 2015 – 2018. GDP will growth about 3.12% – 3.62% and this growth will result in changes in the labor market and consequential decrease of the unemployment rate from 10.59% to 8.97% by the end of 2018. The growth of GDP will also stimulate an

increase in other macroeconomics indicators such as consumption and disposable income. The short term central rate will stay close to zero due to the expansive monetary policy of the ECB and ongoing quantitative easing. According to prediction of the MF SR the central rate will be on the level of 0.79% by the end of 2018. The inflation growth rate should be stable and converge to ECB long term goal of 2% with expected growth of real wages by about 2.16 – 2.72%.

A Worst Case Scenario - this scenario represents an author's definition of economic recession with conditions comparable to 2007 – 2009 economic crisis. This involves a decrease of GDP growth around 6% in first year and additional 3% in second year with slow recovery starting in 2017. Economic downturn will result into private consumption decrease and serious unemployment increase peaking at 17% in 2016. The increase of unemployment will be accompanied by real wages decrease by 10% in two years and its further stagnation. Such a depression will last for two years with only a minor recovery starting at the end of 2017.

For illustrative purposes, the Figure 2 below highlights a sample of macroeconomic environment and forecast scenarios. The presented figures are based upon the data collected by the National Bank of Slovakia and our (Authors) assumptions concerning recession forecast figures.



Source: Slovak National Bank (2016a,b), Ministry of Finance (2016a,b,c), Authors assumptions concerning severe forecast figures

Figure 2 History and forecast figures of sample macroeconomic variables

1.5 Model sign expectations

It should be recognized that many macroeconomics indicators are linked together in the form of various relationships. The rising of GDP indicates a good health of the economy, if GDP grows more goods and services are produced, which has a positive impact on tax collection in general. With the rise of GDP then unemployment should be decreasing. Higher employment level increases collection of personal income tax and also VAT because of higher consumption. We have assumed that the rising of real wages and inflation has a positive impact on tax collection. With the rise of price levels the VAT paid for goods and services is higher as well and with the rise of real wages the purchase power of wages becomes higher. We have assumed that industrial production and exports will increase and also the collection of corporate tax and personal income tax will increase because of larger amount of goods and services which has been produced and sold. Larger sales should also generate higher profits to entrepreneurs and investors.

Finally, we have assumed that low interest loan rates stimulate the appetite for investments and higher investments could lead to higher collection of taxes, especially corporate income tax and VAT. It also needs to be mentioned that all interest rates applied in the Eurozone are influenced by the key interest rate determined by the ECB. Finally legislative changes such as increasing and lowering tax rates should be considered as a significant factor with regards to the tax collection.

2 SUR Model Results

In this part of the paper we present the results of our research for all significant models and tax collection forecasts in Baseline and Severe macroeconomic scenarios.

2.1 Stationarity Results

The basic assumption of the time series stationarity is the characteristic that the mean and standard deviation is constant in time. In the case of non-stationary data modeling, a problem of spurious regression could occur which results in highly statistically significant coefficients, despite the fact that in reality there is either no or a very weak relationship between the variables. The table below displays results of stationarity test.

Table 1 Stationarity Results

Variables	parameter	Original Time Series			Firs Difference of Time Series		
		statistic	alternative	p.value	statistic	alternative	p.value
PERSONAL_INCOME_TAX_EMPLOYEES	3	-3,712	stationary	0,025	-7,026	stationary	0,010
PERSONAL_INCOME_TAX_ENTERPREUNERS	3	-4,988	stationary	0,010	-8,234	stationary	0,010
CORPORATE_INCOME_TAX	3	-6,457	stationary	0,010	-8,630	stationary	0,010
INCOME_TAX_DEDUCTIONS	3	-5,053	stationary	0,010	-8,741	stationary	0,010
VALUE_ADDED_TAX	3	-2,883	non-stationary	0,208	-4,957	stationary	0,010
CRUDE_OIL_GROWTH	3	-3,855	stationary	0,018	-3,994	stationary	0,011
INDUSTRIAL_PRODUCTION_INDEX	3	-2,269	non-stationary	0,464	-4,559	stationary	0,010
EURIBOR_12M_RATE	3	-3,043	non-stationary	0,142	-4,253	stationary	0,010
HICP_INDEX	3	-1,439	non-stationary	0,810	-3,687	stationary	0,028
GDP_GROWTH	3	-4,196	stationary	0,010	-5,195	stationary	0,010
CONSUMPTION_GROWTH	3	-2,826	non-stationary	0,232	-5,698	stationary	0,010
IMPORT_GROWTH	3	-5,426	stationary	0,010	-5,715	stationary	0,010
BALANCE_SERVICES_GROWTH	3	-6,359	stationary	0,010	-9,629	stationary	0,010
INVESTMENTS_GROWTH	3	-4,545	stationary	0,010	-4,962	stationary	0,010
UNEMPLOYMENT_RATE	3	-2,812	non-stationary	0,238	-4,149	stationary	0,010
REAL_WAGE_INDEX	3	-4,135	stationary	0,010	-5,944	stationary	0,010
CONSUMER_TRUST_INDEX	3	-2,261	non-stationary	0,468	-4,879	stationary	0,010

Source: Authors calculation in R

In the model only stationary variables were used. In case that variable is not stationary, first difference of time series (lag3) was taken into an account.

2.2 Model Results and Tax Collection Forecasts

The final SUR model consists of four equations representing Personal Income Tax paid by Employees, Personal Income Tax paid by Self-employed Entrepreneurs, Income Tax Deductions and Value Added Tax. For the sake of better results interpretation and understanding we have converted modeled YoY tax collection growth rates into the absolute figures representing realized and forecasted tax collection volumes. The forecast takes into an account three year period from 2015 to 2017. All coefficient signs are in line with our expectations, while in case of HICP whilst we were not initially certain concerning our assumption about the worse impact of deflation than inflation this was ultimately confirmed. Initially we have tested 5 types of taxes, however for Corporate Income Tax we were not able to estimate enough significant relationship and that is why we have decided to exclude this from modeling.

As was already mentioned the SUR approach takes into consideration the correlation between the residuals of OLS equations. These correlations as well as overall SUR statistics are summarized in table below.

Table 2 SUR overall statistics and correlation of residuals

	N	DF	SSR	detRCov	OLS-R2	McElroy-R2
SUR system	539	516	58,665	0,000	0,260	0,329

	ITD	PITE	PITS	VAT
ITD	1.0000000	0.1510289	-0.0452132	0.122013
PITE	0.1510289	1.0000000	0.0819169	0.157322
PITS	-0.0452132	0.0819169	1.0000000	0.164824
VAT	0.1220132	0.1573221	0.1648239	1.000000

Source: Authors calculation in R

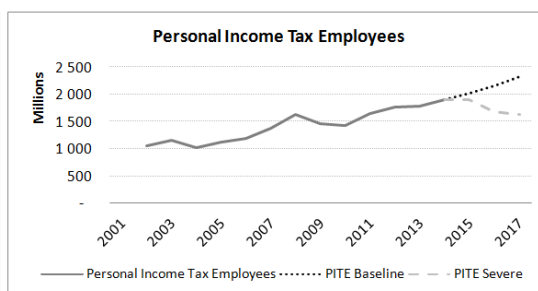
Initially we had expected slightly stronger correlations than the ones observed. Nevertheless, SUR has contributed into more efficient coefficient estimates which we are presenting in following part of the paper. Further we continue with results presentations of particular tax prediction models.

Personal Income Tax – Employees (PITE)

This model can be considered as the most significant one, where almost 47% of variation in endogenous variable can be explained by variation of exogenous variables. Table below summarizes results of SUR regression.

	Lead/Lag	Estimate	Std. Error	t value	
(Intercept)		-0.10756310	0.02962993	-3.63022	***
INDUSTRY_PROD_INDEX	-11	0.00410625	0.00169961	2.41600	*
DUMMY_2004	-12	0.11568141	0.02577086	4.48884	***
GDP_GROWTH	-3	0.90253822	0.34910603	2.58528	*
UNEMPLOYMENT	-2	-0.06310674	0.02231480	-2.82802	**
HICP_INDEX	6	0.03189903	0.01223437	2.60733	*

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
 Residual standard error: 0.102105 on 132 degrees of freedom
 Number of observations: 138 Degrees of Freedom: 132
 SSR: 1.376152 MSE: 0.010425 Root MSE: 0.102105
 Multiple R-Squared: 0.488811 Adjusted R-Squared: 0.469448



Source: Authors calculation in R

Figure 3 SUR results and tax collection predictions for Personal Income Tax paid by Employees

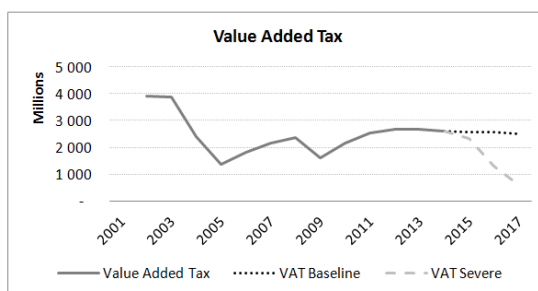
According to the model results, volume of tax collection depends on GDP Growth, Unemployment, HICP and Industry Production. From results it is also obvious that introduction of equal 19% tax rate in 2004 had a positive effect on tax collection. Considering the forecast, its results can be seen on chart above. In baseline scenario, we expect continuous growing trend in tax volume around 6% a year. In the severe scenario, we expect stagnation of tax collection in the first year and then a drop of 12% in second and additional 4% in the third year. These results of severe scenario are comparable to the recession of 2007-2009.

Value Added Tax (VAT)

The second most significant model is VAT model where almost 30% of variation in endogenous variable can be explained by variation of exogenous variables.

	Lead/Lag	Estimate	Std. Error	t value	
(Intercept)		-0.2738445	0.0543939	-5.03447	***
EURIBOR_12M	-12	-0.1166409	0.0274527	-4.24879	***
DUMMY_2004	-12	0.2142371	0.0520489	4.11607	***
CONSUMPTION_GROWTH	2	2.9710077	1.0456674	2.84125	**
EXPORT_GROWTH	10	0.7306004	0.1610473	4.53656	***

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
 Residual standard error: 0.200401 on 129 degrees of freedom
 Number of observations: 134 Degrees of Freedom: 129
 SSR: 5.180706 MSE: 0.040161 Root MSE: 0.200401
 Multiple R-Squared: 0.315394 Adjusted R-Squared: 0.294166



Source: Authors calculation in R

Figure 4 SUR results and tax collection predictions for Value Added Tax

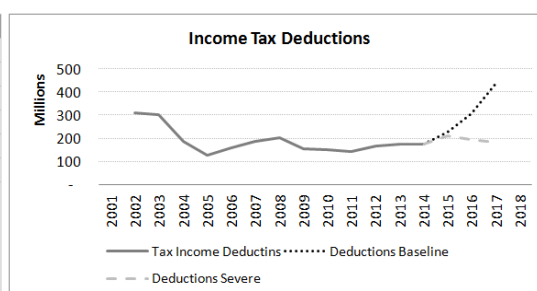
In the case of VAT Model, volume of tax collection depends on 12 Month Euribor Rate, Consumption and Export. Similarly like in the previous model, introduction of equal 19% tax rate in 2004 had a positive effect on tax income. Considering the forecast figures in the baseline scenario, we expect tax income stagnation, which is mostly caused by stagnation of forecasted Export Growth around 6% a year, which is well below its historical figures. In the severe scenario, we expect a 10% decrease of tax collection in the first year and a serious more than 40% drop in following years. In the case of severe scenario, it seems that the model is slightly overestimating the evolution in the second and third years or the recession, however this could be caused by a relatively steep historical drop in the period 2003-2004.

In the case of Income Tax Deductions model and Value Added Tax model, its significance is rather low. Just around 20% of variation in endogenous variable can be explained by variation of exogenous variables, which could result in less robust forecast figures than in the previous two cases.

Income Tax Deductions (ITD)

	Lead/Lag	Estimate	Std. Error	t value	
(Intercept)		-4.24920389	1.41443840	-3.00416	**
INDUSTRY_PROD_INDEX	-4	0.01533419	0.00536681	2.85723	**
CRUDE_OIL_PRICE_GROWTH	-7	-0.22331521	0.10793220	-2.06903	*
REAL_WAGE_INDEX	-11	0.04149354	0.01363821	3.04245	**
CONSUMPT_TRUST_INDEX	-10	0.01345323	0.00439689	3.05971	**
DUMMY_2013	12	0.23210185	0.10231246	2.26856	*

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
 Residual standard error: 0.349178 on 127 degrees of freedom
 Number of observations: 133 Degrees of Freedom: 127
 SSR: 15.484533 MSE: 0.121925 Root MSE: 0.349178
 Multiple R-Squared: 0.235203 Adjusted R-Squared: 0.205093



Source: Authors calculation in R

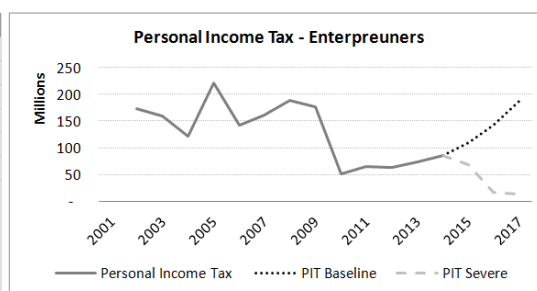
Figure 5 SUR results and tax collection predictions Income Tax Deductions

In the case of ITD Model, structural change in 2013 had a positive effect on tax income. Considering the forecast figures in baseline scenario, we expect tax income to grow on average around 35% in each year which is rather optimistic. An interesting finding is the evolution of tax income in severe scenario which indicates only mild decrease with initial increase in 2015. However this behaviour is comparable to the 2007-2009 crisis period and points out on the fact that Income Tax Deductions might not be in great extend affected by economic cycle.

Personal Income Tax – Self-employed Entrepreneurs (PITS)

	Lead/Lag	Estimate	Std. Error	t value	
(Intercept)		-4.48548379	1.80399173	-2.48642	*
CRUDE_OIL_PRICE_GROWTH	9	-0.40204787	0.15265080	-2.63378	**
IMPORT_GROWTH	10	1.86282334	0.46598412	3.99761	***
BALANCE_SERVICES_GROWTH	-12	-0.02179894	0.00521607	-4.17919	***
INVESTMENTS_GROWTH	-6	0.91601373	0.31944899	2.86748	**
REAL_WAGE_INDEX	-2	0.04318954	0.01775321	2.43277	*

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
 Residual standard error: 0.534901 on 128 degrees of freedom
 Number of observations: 134 Degrees of Freedom: 128
 SSR: 36.623193 MSE: 0.286119 Root MSE: 0.534901
 Multiple R-Squared: 0.249604 Adjusted R-Squared: 0.220292



Source: Authors calculation in R

Figure 6 SUR results and tax collection predictions for Personal Income Tax paid by self-employed Entrepreneurs

In the PITS Model the baseline prediction indicates a continuous increase in tax income to its pre-crisis levels with average yearly growth close to 30%. In the case of the stress scenario, we expect the decrease of tax income by 20% in the first year and then serious drop around 70% in the second with following consolidation in 2017. This situation is comparable to 2007-2009 crisis but with lower magnitude. Having the look at model variables neither structural change in 2004 or 2013 had a significant impact on tax collections which could indicate that legislative changes might not reach its goal to increase tax income in the case of Personal Income Tax paid by Self-employed Entrepreneurs.

3 Discussion

In context of tax income forecasting in general the focus is rather set on optimistic evolution of macro environment conditions. However the history proved us that in case of economic downturn the tax income within a state budget can decrease significantly and affect public finance in negative way. Based on this premise the tax budgeting process should consider assumptions of at least a mild recession or economic slowdown.

It is important to realize that any model is just a simplification of reality and that is why it should be used just like the general guideline and indication of further possible directions in endogenous variables evolution. In general all examined tax types depend on main economic indicators such as GDP, Unemployment, Real Wage, HICP etc., despite that initially we have expected more homogeneity within particular models. All coefficient signs, which represent directions of influence, are in line with our expectations, while in case of HICP whilst we

were not initially certain concerning our assumption about the worse impact of deflation than inflation this was ultimately confirmed.

Having look at the impact of structural changes the models proved that introduction of equal tax in 2004 has a positive effect in case of PITS as well as VAT model. In contrast, in case of PITE model neither structural change in 2004 or 2013 had a significant impact on tax collections which could indicate that legislative changes might not reach its goal to increase tax income in the case of Personal Income Tax paid by Self-employed Entrepreneurs.

Almost all models showed relatively serious drop down in time of recession with exemption of ITD which seemed not to be in great extend affected by economic cycle. These findings are comparable to figures experienced during the 2007-2009 recession. In baseline scenario the forecast values seem to be rather optimistic which might be in certain extend affected by the optimism concerning economic growth with low unemployment, stable inflation.

In the analysis the SUR approach was used and it has brought more efficiency in particular model estimates, however initially we expected slightly higher correlation of residuals within particular models. That is why in future research it might be interesting to use different econometric approaches such as Generalized Least Squares method instead of Ordinary Least Squares. Alternatively it would be interesting to use different modeling approach such as Vector Error Correction Model which could be more effective, especially in case of VAT model due to possible cointegration relationship between variables.

Due to the fact that the implementation of the tax reform was recently completed and therefore can be considered as an essential structural change, in future research it might be interesting to examine the effectiveness of this tax reform on tax collection in upcoming years.

Conclusion

The tax budgeting process is essential for the national government as well as the health of public finance and the overall economy itself. The initial point of every state budget is to prepare a reliable forecast of tax collection income. The primary goal of this paper was to construct a tax forecasting model based on macro environment in different macroeconomic scenarios and estimated the impact on tax amounts collectable.

The outcomes of modeling process are four tax collection models Personal Income Tax paid by Employees, Personal Income Tax paid by Self-employed Entrepreneurs, Value Added Tax and Income Tax Deductions joined together in SUR model. Based on model results we have forecasted possible evolution of tax income in perspective of three years. In all models we have identified a relatively strong relationship with main indicators of macroeconomic environment such as GDP, Unemployment, Index of Industrial Production, Consumption etc.. Further we have defined two possible macroeconomic scenarios which have resulted in two possible paths of tax collection income. The baseline scenario considers economic forecasts with low unemployment and stable price level converging to ECB long term goal of 2%. In contrast to the baseline scenario we have considered a severe recession scenario comparable to one in 2007-2009.

The principles applied in regression analysis have its limits and restrictions such as linearity assumption or assumptions of future macroenvironment evolution in conditions of uncertainty. However we believe that the outcomes of our analysis provided possible directions and volumes in which could tax income collection evolve in different scenarios.

The main contribution of this paper is the construction of the tax collection forecasts in worsening macroeconomic scenarios, which is significantly different from a baseline prediction. These results are comparable to the changes in tax collection seen in the crisis of 2007 - 2009. The approaches and principles applied in this paper can be considered as a contribution to the theoretical framework as well as in the practical process of predicting tax collection amounts. The definition of stress scenarios can make the whole budgeting process more robust to withstand potential disturbances or changes in economic conditions. Furthermore principles applied in this paper might also be used to predict tax collection in other countries.

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*ASSESSMENT OF VAT GAP RELATIONSHIP WITH BUDGET STRUCTURE
AND MACROECONOMIC INDICATORS: EU COUNTRIES CASE*

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Abstract

Purpose of the article is to perform a correlation/regression analysis of potential variables explaining the VAT gap in 28 European Union Member States between the years 2004 and 2014, for which data on VAT gap was available.

Methodology/methods Research is based on analytical approach, there was invoked a systematic, logical and comparative analysis of scientific literature, quantitative mathematical-statistical technique was used for empirical data processing (calculating Pearson correlation coefficients).

Scientific aim of the research is to assess VAT gap relationship with budget structure and macroeconomic indicators in European Union countries.

Findings Paper revealed various determinants (macroeconomic and budget structure indicators) as some tools for understanding developments and differences in the performance of the VAT gap in EU countries. Overall developments are in line with general economic conditions. In the absence of policy changes, revenues and VAT gap tends to follow the nominal growth of the economic base, although revenues reflect a greater sensitivity to the business cycle (real GDP growth). As economy improves, VAT gap diminishes by itself due to the growing taxpayers' income and the decline of risky intentions. When such situation occurs, it is evaluated positively, but it wasn't taken into account on the papers' estimations.

Conclusions The results of performed analysis cannot be fully extrapolated to all taxpayers or to the economy as a whole because their impact would be overestimated. Even though, GCI, CPI, Human Development Index correlation coefficients' opposite direction values suggest, that strong governance, institutions and low scores of corruption, balanced social environment in all groups of countries exhibit different, but systematically negative movement with respect to the level and behaviour of VAT gap. Examined the value added tax gap relationship with budget structure and macroeconomic indicators gives a glance to the problem of tax evasion among European Union countries with consequences in the competitiveness area. This field requires continuous extension of research and results monitoring in order to deal with tax avoidance and evasion phenomenon.

Keywords: tax evasion, tax fraud, VAT gap, budget structural indicators, estimates.

JEL Classification: H26, O17

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Introduction

The European Union can be considered as an economic unit as well as a voluntary long-term incorporation experiment of countries, which have a wide variety of historically formed economic and financial systems, different economic development levels. Although united fiscal regulation principles are applied to every country of EU, historical-moral factors still exist. It affects shadow economy, competitiveness, structural budget indicators, and consumption levels differently.

Supposedly, countries of the EU, which have high economic achievements, deep development traditions and sustained history of market economy, financial-fiscal systems' experience will do increasingly more influence in changing the global financial systems. The EU, an example of independent countries' that have distinctive economic development models long-term incorporation, most accurately reflects the worlds' globalization processes right now. Evaluating the growth and experience levels of EU countries, an assumption can be made that exclusions of policy development history peculiarities will repeat in other EU countries as well as beyond its' borders.

Fight against tax evasion and fraud are at the top of the agenda of the OECD, EU Commission and Member States, but for businesses, the administrative burden related to pan-EU VAT formalities is expected to increase (Mankiw, Weinzierl & Yagan, 2009).

Models estimated impact of various macroeconomic determinants for shadow economy level attempt to explain their effects in the development of production, taxes, GDP, labour and social-money markets simultaneously (Sinn, Gebauer, Parsche, 2004). In case of VAT fraud in many cases the estimation from different approaches has the advantage of comparisons as it is difficult to point out which of them is the best one.

Kanniainen, Pääkönen and Schneider (2004) in their model of the shadow economy incorporate labor supply decisions including social security contributions. They hypothesize that tax hikes unambiguously increase the shadow economy, while the effect of public goods financed by those taxes depends on the ability to access public goods. Morality is also included in this analysis. Almost all studies ascertain that the tax and social security contribution burdens are among the main causes for the existence of the shadow economy. (Schneider, 2003, 2005, 2009; Tanzi, 1999; Dell'Anno, 2003). Schneider and Teobaldelli (2012), Buehn and Schneider (2011) also argue that the efficient and discretionary application of tax systems and regulations by government may play a crucial role in the decision of conducting undeclared work, even more important than the actual burden of taxes and regulations.

Although VAT gap is not caused by tax evasion only, it could serve as its indicator. Study was carried out in order to determine various factors influencing the size of the VAT gap and to explore interrelations between them.

1 Main causes of the shadow economy as VAT gap aspect

Many factors cause or encourage shadow economy depending on the country and the historical moment of which we speak. It is important to know what may be the main factors of the problem to adopt appropriate policies. The main objective of the paper is to perform a correlation/regression analysis of potential variables explaining the VAT gap in 28 European Union Member States, while a secondary objective is to analyse differences in VAT gaps among member states, and the characteristics determinants of national economies that are correlated with compliance gaps.

Some studies have examined empirical determinants of the VAT revenues, rather than measures of VAT non-compliance per se. Mathews (2003) regresses VAT revenues on VAT rates and control variables for a sample of 14 EU countries. He concludes that the base-eroding effects of tax rate increases are strong. Studies have shown that the behaviour of the VAT gap (the difference between the VAT revenues theoretically established by legislation, or VTTL, and actual collections) is influenced by a number of economic variables as well as by policy actions, through the influence that these factors have on both the growth of the theoretical VAT revenue on the one hand, and the capacity and willingness to pay by taxpayers on the other hand (Barbone, Bonch-Osmolovskiy & Poniowski, 2015).

The establishment and evaluation of different priorities (economic development, structural budget indicators, and level of shadow economy) has influence on public financial policy tendencies, which determines a countries' economic development and budgetary finance distribution tendencies as well. Numerous assumptions must be made in order to measure this important component of the potential VAT base across countries in the comparable fashion possible. If the objective is balanced and competitive economic growth, evaluation of causalities by identifying the long-term development strategies is necessary.

Economic potential of countries is very distinct. So in the analyzed period there is sharp GDP quantitative and qualitative differences that determine the perspectives of countries' economic development. Reckon (2009) study is based on a "random effects estimator" that assumes unobservable factors influencing the VAT gap.

Understanding the determinants that are making influence the VAT gap could potentially help in reducing it by making changes with the use of fiscal and macroeconomic levers. Reckon (2009) study also used econometric techniques to investigate the links between estimated VAT compliance gaps and the economic and social characteristics of EU member states. The main finding was that VAT gaps were significantly higher among countries with weaker legal institutions, and higher perceived levels of corruption.

2 Research methodology

The aim of this paper is to research interrelationship between chosen indicators and the VAT gap. Budget structural and macroeconomic indicators interact with each other and also have an influence on the VAT gap. Research will examine the dependence of various economic, social and tax system factors on the VAT gap in EU States.

Countries' development level affects the economic growth, budget formation and tax avoidance tendencies differently. Regularities and interactions of countries' tax experience and economic growth can be determined by evaluating dependences of these tendencies. It would define taxes and competitive economic development links during a certain period.

Evaluation questions should be dealt with similar objects, only then it can be said about the impact uniformity and ability to reveal itself. The prevailing opinion is that taxes diversely influence countries' (with different economic development levels) competitiveness, economic potential and social environment level.

The potential of economic development level among EU countries, which in research is assessed with GDP per capita rate, has pronounced differences during the analyzed period. In order to evaluate countries' level of economic development, GDP per capita is selected as grouping principle.

In this research GDP per capita indicator, which is used to assess the countries' economic development level, differs among EU countries up to 10 times during the analysed period. In order to evaluate the significance of development levels, EU countries are grouped according to GDP per capita (see Table 1), while using 10000 euro per citizen step (in growth direction), distributing these countries into appropriate groups (it was used 2004-2014 data). It reveals, if there are any specific peculiarities, that occur at different levels of countries' economic development and economic situation.

Table 1 EU countries grouping

Group (based on GDP per capita (in euro) average)	Countries
G1 (to 10000)	Bulgaria, Romania, Poland, Latvia, Lithuania, Hungary, Croatia
G2 (from 10000 to 17000)	Slovakia, Estonia, Czech Republic, Malta, Portugal, Slovenia
G3 (from 17000 to 27000)	Greece, Cyprus, Spain, Italy
G4 (from 27000 to 37000)	France, United Kingdom, Germany, Belgium, Austria, Finland
G5 (over 37000)	Netherlands, Sweden, Ireland, Denmark, Luxembourg

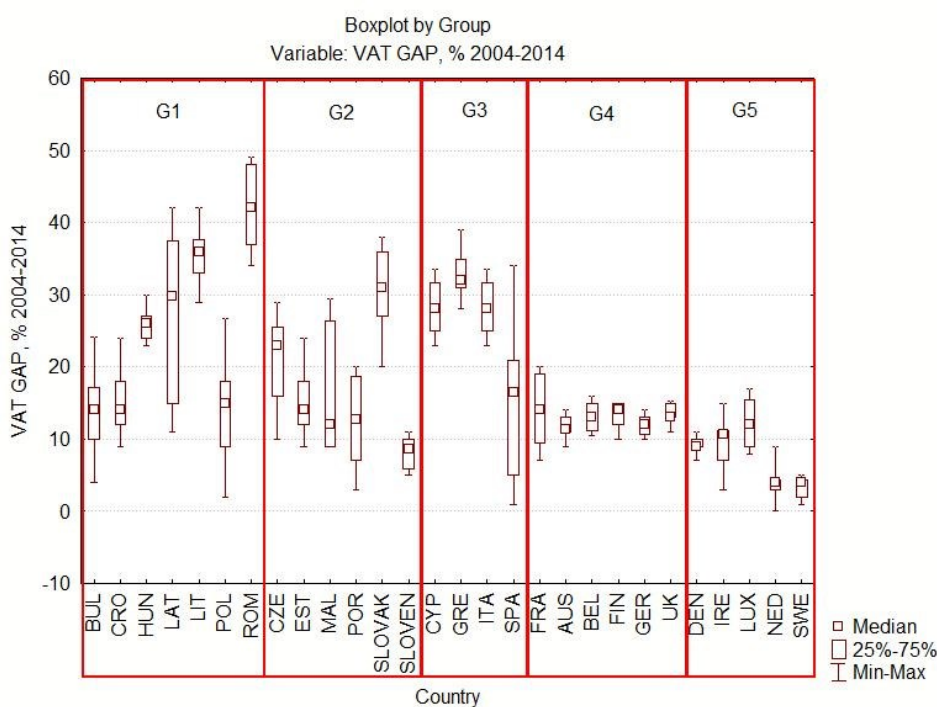
Source: own grouping according to GDP per capita indicator (data were obtained from European Commission, 2014 and EUROSTAT)

Several studies have analysed the economic, social and institutional determinants of VAT non-compliance in the data. Much of this previous quantitative research, however, has been hampered by the difficulty in measuring non-compliance in a consistent way for a large sample of countries and years. In most cases, when the shadow economy has reached a significant size, there is a problem of poor public governance (Moore, 2007, OECD, 2008). Analysis of scientific literature had revealed three main factors that have a strong correlation with the shadow economy: tax burden, intensity of regulations, governance structure (OECD, 2010, Buehn and Schneider, 2011).

In this research we estimate shadow economy for European Union countries doing an indirect calculation of the tax evasion through the VAT gap. First, we report the estimation of VAT gap provided by European Commission (2013a), OECD and other authors. Secondly, we try to calculate the effect of the economy on tax

evasion to better focus on tax compliance without economic distortion. A recent study sponsored by European Commission -Director General TAXUD- quantifies the VAT gap for European Countries. In this research the VAT gap is estimated as the difference between the really VAT receipts and the VAT that should have receipts or theoretically calculated VAT value, also called VAT Total Tax Liability (VTTL). The VTTL takes into account the less amount of revenue due to exemptions, special regimes, reduced rates, etc. So the VAT gap is defined as the difference between the theoretical VAT liability and the collections of VAT, in any country and in any year (can be calculated in absolute or percentage terms). The calculation of the theoretical VAT liability is performed by applying the “top-down” methodology employed by Reckon (2009), and modified as necessary in later studies (EC, 2013b, EC, 2015). The dynamic correlational analysis of structural budget indicators variation and VAT gap should highlight the effect of macroeconomic factors.

In Figure 1 is shown the box plot of VAT gap where can be seen the sample’s (EU countries) VAT gap median, scatter and minimum and maximum values during analyzed period of 2004-2014. Countries are grouped as in Table 1. Dissemination of VAT gap data is shown in Figure 1 and is useful to compare countries’ results at a glance. Extreme fluctuations of VAT gap are observed in some countries like Latvia, Malta, and Spain. Deeper analysis of primary data revealed that in Latvia case VAT gap increases in crisis period. Therefore it can be said that VAT gap in weaker economic countries is strongly linked to economic cycle phase (crisis or rise). The opposite trend is observed in Sweden. During the crisis period VAT gap in this country decreased. This trend discrepancy may be caused by cultural differences around EU.



Source: own presentation of data

Figure 1 VAT gap data summary in EU countries (2004-2014)

The different spread of VAT gap indicates that it may be influenced by different factors for different EU countries group (G1—G5). Correlational analysis is performed in order to reveal linkage between VAT gap and 23 other important macroeconomical indicators for each group separately. Only factors that exhibit significant Pearson correlation coefficient are considered.

Performed research seeks to enhance understanding of the economic factors leading to revenue non-compliance. The VAT gap estimates indicate that non-compliance varies substantially among member states, and it has also varied over time.

Although fiscal harmonization between EU countries enacts for over a couple of decades, while evaluating both strength and intercommunication between different indexes in the EU countries, the variation dependences correlation of countries in different groups presents very distinctively. It corresponds to statement of Kuehn (2014) that “*despite a positive relation between tax rates and the informal economy, for countries with equally high tax rates, informal economy estimates are strikingly different*”.

Understanding these patterns is a step towards improving VAT compliance among all member states and reaping its economic and fiscal benefits.

It is relevant to elaborate and assess separate phenomenon or their groups while making calculations in the administration sphere. This research seeks to estimate indicators, which reflect countries' economic environment or development (GDP per capita, GDP per capita in PPS), economic structure (import/export levels, capital structure of a company), and regulation influence through budget redistributions' effect on productivity (taxes on production and imports, labour productivity per person). Meanwhile social environment and its development indicators also reflect changes in the level of public life. Quantitative evaluation is always open to criticism because of subjectivity or incompleteness, but in this paper chosen indexes and investigation methods should be considered as indications and estimates, which the authors believe currently reflects the complexity of the phenomenon the best.

3 Results

During the investigation we seek to highlight a few facts that are useful to better understand/explain the evolution and influence of budget structure and macroeconomic indicators to the VAT gap. In Table 2 there is shown results of performed correlation analysis of potencial variables explaining the VAT gap in EU countries. Data used for analysis was from 2004 to 2014. VAT gap has been rather differentiated across the EU-28. So, in order to help discern patterns, it is useful to turn to the country groupings introduced in Table 1.

Table 2 VAT gap and explanatory variables correlation coefficients

Variable	Group of countries				
	G1	G2	G3	G4	G5
GDP (market prices), euro per capita	0.046884	-0.260688	-0.216718	-0.165177	0.595945
Real GDP growth rate - volume, percentage change on previous year	-0.20512	0.050738	-0.505045	0.156377	-0.072477
Final consumption expenditure, current prices, euro per capita	0.054688	-0.291027	0.118355	-0.049206	0.516437
GDP at market prices, current prices, PPS per capita	0.098184	-0.087589	-0.339113	-0.319754	0.545964
Final consumption expenditure of households, current prices, euro per capita	-0.32178	-0.316583	0.201548	-0.121188	0.596807
GDP per capita in PPS	0.083244	-0.238145	-0.404107	-0.438748	0.511733
General government gross debt, % of GDP	-0.107155	-0.074874	0.639564	-0.03011	-0.007259
Gross fixed capital formation by AN_F6 asset type, % of GDP	-0.036922	-0.036599	-0.669805	0.003535	-0.28723
Taxes on production and imports, % of GDP	-0.572607	-0.760928	0.29774	0.130314	-0.40747
Net national income, % of GDP	-0.181949	-0.501437	-0.104125	0.205887	-0.769433
Exports of goods and services in % of GDP	0.133075	0.182233	0.136371	-0.163156	0.618392
Imports of goods and services in % of GDP	0.090993	0.151902	0.17735	-0.119976	0.622967
Export to import ratio	-0.012668	0.349469	-0.265081	-0.263162	0.31223
Real labour productivity per person, index, 2010=100	0.185533	0.160631	0.127462	0.005563	0.152826
Nominal unit labour cost based on persons, index, 2010=100	0.226023	0.277755	0.132765	-0.129256	0.103241
Implicit tax rate on labour, ratio of taxes and social security contributions on employed labour income to total compensation of employees	-0.01829	0.161413	0.014807	-0.055535	-0.491866
Wages and salaries, % of GDP	-0.291544	-0.65099	-0.530532	-0.143614	0.347083
Employers' social contributions, % of GDP	0.171953	0.009143	-0.446983	0.251708	-0.35885
Social benefits (other than social transfers in kind) paid by general government, % of GDP	-0.173853	-0.117405	0.470433	-0.051223	0.430211
House price index - annual data, annual average rate of change	-0.276351	-0.068167	-0.543063	0.023775	-0.205321

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GCI, points 2004-2014	-0.002668	-0.162265	-0.74433	-0.077209	-0.604952
CPI, 2004-2014	0.093691	-0.584928	-0.110514	-0.139492	-0.107268
Human Development Index, 2004-2014	-0.402021	-0.33816	-0.23973	-0.039548	-0.296235

Marked correlations are significant at $p < ,05000$

Source: own calculations (primary data were obtained from European Commission, 2014 and EUROSTAT).

As Table 2 shows, they indeed offer interesting contrasts: statistically significant VAT gap correlation with the most meaning indicator - The Corruption Perceptions Index (CPI) - related to public sector corruption, which may directly influence tax enforcement and tax morale of taxpayers (a higher index indicates a lower corruption level) is in the second group (-0,59). Assessing these countries' development in this field the results is not surprising. The majority of this group countries like Portugal, Malta, Estonia, improves its position on this indicator. Our findings about the effect of lower perceived corruption is consistent with Christie and Holzner (2006), which found that VAT compliance is higher in countries with better judicial and legal effectiveness. Meanwhile statistically significant VAT gap correlation with Net national income (-0,50) indicator corresponds to the logic, that increasing Real GDP growth rate leads to rising of household income – strong relationship with Wages and salaries (-0,65), although countries' VAT gap rate decreases, as confirmed by the directions of ratios. It can be assumed that the decline in corruption positively influence GDP and wage changes, but the VAT gap level variation of the analyzed indicators impacts on export to import ratio level positively (0,35).

In the first group, to which Lithuania, Latvia and some other countries belongs, most significant negative VAT gap correlation coefficient is with taxes on production and imports (-0,57). The same significant results were found in the second and the fifth group countries (-0,76 and -0,41 respectively).

Real GDP per capita, which is intended to capture the changes in economic circumstances of member states over the sample period, and which may have had an independent influence on VAT compliance is very important indicator. In the fifth group, all GDP per capita indicators show significant positive correlation coefficients which means that in countries with high economic development level VAT gap is the smallest. So, it can be assumed that those group countries' good practice experience in the context of shadow economy is relevant.

It should be emphasized that most positive correlation coefficients are in the 5th group – 10 determinants. Positively related GDP indicators (0,6; 0,55; 0,51), Final consumption expenditure of households (0,60), Exports - Imports determinants (0,62; 0,62), Wages and salaries (0,35) show, that countries with high economic development maintain a stable development trends and the positive indicators are consistent with the current situation on the shadow economy situation (in this case VAT gap), therefore coefficients of structural indicators show a positive effect, but existing tax culture doesn't presume its grow.

The vast majority of other groups countries' correlation coefficients show a negative impact on the VAT gap, except in the third group - General government gross debt (0,64) and Social Benefits (0,47). This suggests that this group of countries (Greece, Cyprus, Spain, Italy), a high level of shadow economy is determined by governments' budgetary cost-income policy, the CPI rate. General government gross debt; Social benefits and CPI correlation coefficients in Greece are -0,61 and -0,64 respectively; in Italy -0,89 and -0,90; in Spain -0,61 and -0,69 and low economic growth rates (an average of 0,8% over the 2010-2014 period).

Differences in compliance gaps among countries groups may be correlated with certain observed explanatory variable, they are probably also correlated with many other factors, which are not included in the estimation. Attributing causal effects to correlation coefficients in this context is therefore a precarious exercise.

4 Discussion and Conclusions

Value added tax represents one of the most significant sources of revenue for the general government budget and the increase in VAT revenue in recent years has not been commensurate to the growth of the macroeconomic base. In the absence of a comprehensive analysis in this area, the mismatch was attributed to growing VAT gap and impact of determinants.

The knowledge of the structure of VAT avoidance and evasion, the identification of specific impact of different budget structure indicators and avoidance schemes helps to identify weak links in the government financial and fiscal system and can be used for risk analysis.

Persistent differences in VAT gaps across countries demonstrate that the economic, legal, and cultural institutions have a variety of influences on how VAT systems are designed, how budget and GDP determinants are enforced, and how individual taxpayers view tax compliance. All such institutional influences may be

reflected in the reported VAT gaps and are worthy of further investigation. As discussed earlier, Reckon (2009) had investigated these issues and concluded that institutional factors were important in determining cross-country differences in the VAT gaps. In this study calculating the VAT gap in the EU Member States, also was conducted an econometrical analysis to identify country-specific characteristics that relate to different levels of VAT gap. The variable identified as having the strongest relationship to the size of the VAT gap was the perceived level of corruption in the country.

The results of such performed analysis cannot be fully extrapolated to all taxpayers or to the economy as a whole because their impact would be overestimated. Even though, GCI, CPI, Human Development Index correlation coefficients' opposite direction values suggest, that strong governance, institutions and low scores of corruption, balanced social environment in all groups of countries exhibit different, but systematically negative movement with respect to the level and behaviour of VAT gap.

Irrespective of the type of determinants impact on VAT gap evasion or avoidance involved, the loss of tax receipts has a direct impact on the government's economic policy - country size, government's debt, at the same time, on allocation policy to keep the same level of public services and social standards.

To sum up, examined the tax gap relationship with budget structure and macroeconomic indicators gives a glance to the problem of tax evasion among European Union countries with consequences in the competitiveness area. This field requires continuous extension of research and results monitoring in order to deal with tax avoidance and evasion phenomenon. Cortellese (2015) asserted, that tax evasion gives a higher tax burden especially for middle lower class of the society that is the most vulnerable part of the society that could not evade tax obligation.

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*LOCAL AND REGIONAL GOVERNMENTS IN THE ACHIEVEMENT OF
BUDGET FUNDS*

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Abstract

Purpose of the article is to conclude on the size of realized revenues and receipts on the county level in the Republic of Croatia and determine their trends in the observed period. The paper establishes participation in revenues at city, municipality and county level. The results of the comparison may be interested because the state is often compared to the number of local units and revenue.

Method of analysis we come to the revenue generated by counties. The obtained data compare, in the period from 2010 to 2012, with the application of the relative numbers, or index and percentages. For each county is determined by the size of the revenue generated per capita. Based on this we derive a conclusion about the differences in the development of the county.

Scientific aim is to investigate how individual levels of local authorities involved in the achievement of the total revenue of all local government units. The goal is to determine the importance of individual levels of local government in the realization of total revenue.

Findings confirmed that the total revenues and receipts of local and regional (regional) governments, at the level of all counties in 2012 compared to 2010 decreased. This indicates less able to satisfy public needs. Total revenues and revenues per capita in individual counties differ significantly. Established the importance of funding public needs at the level of the budgets of cities.

Conclusions relate to confirmation various participation of individual counties in overall revenues and receipts. These differences are the result of territorial organization, that determined the number of counties, cities and municipalities. The assumption that city budgets have the most significant effect on financing public needs has been confirmed, followed by county budget, while municipal budgets have significantly smaller opportunity to participate. The results of this work suggest the need to review the justification of existing territorial organization.

Keywords: audits, financial statements, local and regional governments, budget, revenues

JEL Classification: M42, H71

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Introduction

The structure of the Republic of Croatia is based on 20 counties as units of local (regional) self-governments, and 555 local self-government units that are made up of 428 municipalities and 126 cities, and the City of Zagreb which has a special status of both the city and a county. This is a total of 576 local and regional self-government units. The basis for comparison of local units can be overall revenues, but also the achievement of certain types of revenues, and their structure. The subject of this paper is the comparison of local and regional self-government units according to the size of the total realized revenues and the proportion of each level of local government in overall revenues and receipts. The paper covers counties, in which is included the realization of municipalities and cities in their area. The aim is to make conclusions regarding the movement of realized overall revenues by county, as well as the participation of cities and municipalities in their realization. The paper gives an overview of revenues and receipts of Vukovar-Srijem County. Another focus is the participation of budgets of cities, municipalities and counties in the overall realization level of all counties, as well as for Vukovar-Srijem County. Used data has been obtained via audit processes for observed period, which is available on websites.

1 Financing of local and regional self-governments

The area of local and regional self-governments is regulated by legislation, including the Act on Financing Local and Regional Self-Governments (Official Gazette 150/02 - revised text, 147/03, 132/06, 26/07, 73/08, 25/12 and 147/14), which lays down the sources and methods of funding local self-government activities of counties, municipalities and cities, i.e. local and regional self-governments. Revenues are collected from own sources, shared taxes and grants from state and county budgets. County's own sources are county's assets, county taxes, fines and confiscated assets for the offenses prescribed by the county and other revenues determined by a special law. County taxes are taxes on inheritance and taxes on gifts, motor vehicles tax, vessels tax and tax on slot machines. County taxes may be fully or partially ceded to the city or municipality in whose territory the taxpayer resides. Municipalities or cities can introduce taxes: surtax on income tax, consumption tax, vacation home taxes, taxes on trade name, and the tax on use of public land, while the tax on uncultivated arable land was introduced, and later discontinued (Decision of the Constitutional Court of the Republic of Croatia, 2007).

Areas of self-governmental scope of local self-governments (municipalities and cities) and counties are determined by the Act on Local and Regional Self-Governance (Official Gazette, 33/01, 60/01, 129/05, 109/07, 125/08, 36/09, 150/11, 144/12, 19/13). Activities within the scope cities and municipalities relate to the settlement organization and housing, spacious and urban planning, utilities, child care, social welfare, primary health care, education, culture, physical culture and sports, consumer protection, natural environment protection and improvement, fire and civil protection, traffic etc., while large cities perform the duties of maintaining public roads, issuing construction and location permits, other acts relating to construction and implementation of spatial planning documents. The scope of the operations of the County are operations of regional significance and it harmonizes the interests of even development of municipalities and cities in its territory as well as a county as a whole, and especially operations relating to education, health care, spatial and urban planning, economic development, traffic and traffic infrastructure, public road maintenance, planning and developing a network of educational, health care, social and cultural institutions, issuing building and location permits, other acts relating to construction and implementation of spatial planning documents. Local units should improve living standard of people living in their area. That should be achieved via realized revenues that should allow local units to freely perform operations within their scope, i.e. via existing financing system.

2 Revenue realization

The following shows the realization of total revenues and receipts of local and regional self-governments in the period from 2010 to 2012, in absolute terms and via relative numbers. Although the subject matter of this paper is not analysis of the structure of revenues and receipts, it should be noted that in most of the local units the most significant revenue and receipt source according to values are revenues from taxes and income surtax (Crnković et al., 2010). Regarding other revenues, we can highlight property revenues (Mahaček et al., 2009).

Overall realized revenues and receipts according to counties for 2011, as well as 2012, with the City of Zagreb, were lower compared to 2010, while in 2012 compared to 2011 a slight increase is observed. According to the share in the realization of overall revenues, in 2010 the most significant is the share of the City of Zagreb (28.66%), Split-Dalmatia County (9.99%), Primorje-Gorski Kotar County (9.33%), Istrian County (6.99%), Zagreb County (5.88%) and Osijek-Baranja County (5.38%), while the participation of other counties amounts to a total of 33.77%, i.e. the share of each individual county amounted to less than 4.00%. According to the

participation in the realization of overall revenues in 2011, the most significant participation was achieved by the City of Zagreb (28.84%). According to the participation in the realization of overall revenues in 2012, the most significant participation was by the City of Zagreb (29.12%), Primorje-Gorski Kotar County (10.30%), Split-Dalmatia County (9.25%), Istrian County (6.64%), Zagreb County (5.95%) and Osijek-Baranja County (5.04%), while participation of each individual county was less than 4.00%. For these participation, we can conclude that during the observed period the same counties accounted for the largest participation in the achievement of overall revenues and income at the level of all counties and the City of Zagreb.

Overall revenues and receipts for 2011 compared to 2010 have increased only in Zadar County and Dubrovnik-Neretva County, while in all other counties they were lower than in 2010. Overall revenues and receipts for 2012 compared to 2010 were higher in only six counties (Krapina-Zagorje, Sisak-Moslavina, Koprivnica-Križevci, Primorje-Gorski Kotar, Dubrovnik-Neretva and Međimurje), while the majority of counties have achieved a decrease in overall revenues and receipts, which confirms the calculated index. In eight counties and the City of Zagreb we have observed an increase in overall revenues in 2012 compared to 2011, and the most significant increase is observed in Primorje-Gorski Kotar (12.5%), which after the City of Zagreb has in 2012 the largest share in the achievement of revenues and receipts among all counties and the City of Zagreb (Table 1).

Table 1 Overall revenues and receipts according to counties including the City of Zagreb (in HRK)

County	Overall revenues and receipts (in HRK)			Participation in %		
	2010	2011	2012	2010	2011	2012
1	2	3	4	5	6	7
Zagreb	1.334.745.897	1.320.940.960	1.308.826.271	5.88	6.03	5.95
Krapina-Zagorje	417.847.387	392.869.351	424.325.040	1.84	1.79	1.93
Sisak-Moslavina	705.575.689	728.481.100	724.254.701	3.11	3.32	3.29
Karlovac	514.274.908	494.579.331	500.843.208	2.27	2.26	2.28
Varaždin	649.428.773	615.335.418	603.498.097	2.86	2.81	2.74
Koprivnica-Križevci	484.755.957	471.400.229	514.713.294	2.13	2.16	2.34
Bjelovar-Bilogora	406.015.253	380.279.606	369.107.919	1.79	1.73	1.68
Primorje-Gorski Kotar	2.119.500.772	2.015.395.127	2.267.242.131	9.33	9.19	10,30
Lika-Senj	304.345.834	292.272.627	272.173.770	1.34	1.33	1.24
Virovitica-Podravina	338.435.857	292.096.624	293.638.813	1.49	1.33	1.34
Požega-Slavonija	264.575.373	243.496.015	252.568.298	1.16	1.11	1.15
Brod-Posavina	464.370.611	459.394.735	430.017.478	2.04	2.10	1.96
Zadar	866.955.013	962.873.597	840.216.858	3.82	4.39	3.82
Osijek-Baranja	1.222.697.018	1.115.727.663	1.109.289.754	5.38	5.09	5.04
Šibenik-Knin	529.635.096	488.985.220	520.532.683	2.33	2.23	2.37
Vukovar-Srijem	659.995.052	574.739.358	566.992.553	2.91	2.62	2.58
Split-Dalmatia	2.268.638.303	2.148.474.940	2.034.922.361	9.99	9.80	9.25
Istrian	1.588.667.086	1.518.143.603	1.459.516.353	6.99	6.93	6.64
Dubrovnik-Neretva	713.734.620	751.626.305	741.761.439	3.14	3.43	3.37
Međimurje	349.966.177	331.051.916	353.053.265	1.54	1.51	1.61
City of Zagreb	6.510.542.935	6.320.883.078	6.404.786.876	28.66	28.84	29,12
TOTAL	22.714.703.611	21.919.046.803	21.992.281.162	100	100	100

Source: State Audit Office, 2011, 2012, 2013

Below the authors give the calculation of overall revenues and receipts per capita in 2012. Revenues and receipts per capita can be compared with the calculated revenue and receipts per capita for the period from 2007 to 2011 (Mahaček et al., 2015). For further determination of the totality of realized revenues and receipts at the level of all counties, and each county separately, i.e. drawing conclusions, the authors are comparing counties according to their fiscal capacity. Part of the revenues of local and regional self-governments is collected under the system of separation (own revenues), and the second part is a result of participation in income (narrower or wider) of units, i.e. central government and local self-government units. Through vertical active financial equalization a division of tax revenues between the central government and local units is performed, or through horizontal active financial equalization via direct transfer of funds to local units. This reduces the difference in the tax power of local governments. Therefore, a fiscal capacity is calculated in order to take into account all sources of funding or some funding sources such as tax revenues. The fiscal capacity below is calculated through overall realization of revenues and receipts. When calculating the fiscal capacity for 2012 we used the data on population according to the census conducted in 2011.

The average realized revenues and receipts per capita in 2012 amounted to HRK 5,132.52. The largest revenue and receipts per capita is recorded in Zagreb County (HRK 8,107.15), Istrian County (HRK 7,015.05) and Lika-Senj County (HRK 5,344.39), while the lowest was in Brod-Posavina County (HRK 2, 711.76). In fiscal capacity analysis we see that the average revenues and receipts per capita in 2012 was achieved in three counties and in the City of Zagreb, while 17 counties were below average. Revenues per capita in counties are different, which is a result of unequal revenue realization, uneven number of inhabitants between counties or unequal economic strength and various other factors (Table 2).

Table 2 Revenues and receipts per capita and an overview of realized revenue trend

County	Population (census of 2011)	Overall revenues and receipts per capita 2012	Index for 201. 2010 = 100	Index for the 2012 2010 = 100	Index 2012 / 2011
1	2	3	4	5	6
Zagreb	317.606	4,120.91	99.0	98.1	99.1
Krapina-Zagorje	132.892	3,193.01	94.0	101.6	108.0
Sisak-Moslavina	172.439	4,200.06	103.2	102.6	99.4
Karlovac	128.899	3,885.55	96.2	97.4	101.3
Varaždin	175.951	3,429.92	94.8	92.9	98.1
Koprivnica-Križevci	115.584	4,453.15	97.2	106.2	109.2
Bjelovar-Bilogora	119.764	3,081.96	93.7	90.9	97.1
Primorje-Gorski Kotar	296.195	4,278.40	95.1	107.0	112.5
Lika-Senj	50.927	5,344.39	96.0	89.4	93.1
Virovitica-Podravina	84.836	3,461.25	86.3	86.8	100.5
Požega-Slavonia	78.034	3,236.64	92.0	95.5	103.7
Brod-Posavina	158.575	2,711.76	98.9	92.6	93.6
Zadar	170.017	4,941.96	111.1	96.9	87.3
Osijek-Baranja	305.032	3,636.63	91.3	90.7	99.4
Šibenik-Knin	109.375	4,759.16	92.3	98.3	106.5
Vukovar-Srijem	179.521	3,158.36	87.1	85.9	98.7
Split-Dalmatia	454.798	4,474.34	94.7	89.7	94.7
Istrian	208.055	7,015.05	95.6	91.9	96.1
Dubrovnik-Neretva	122.568	6,051.84	105.3	103.9	98.7

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Međimurje	113.804	3,102.29	94.6	100.9	106.7
City of Zagreb	790.017	8,107.15	97.1	98.4	101.3
TOTAL	4.284.889	5,132.52	96.5	96.8	100.3

Source: Croatia Bureau of Statistics, 2013

We can compare the data above with realized revenues and receipts per capita in previous years. The largest revenues and receipts per capita in 2003 were realized in Primorje-Gorski Kotar County (HRK 4,952.00), followed by Istrian County (HRK 4,951.00) and Lika-Senj County (HRK 4,017.00), which were significantly higher compared to other counties. The lowest per capita average in 2003 was recorded in Brod-Posavina County (HRK 1,679.00), and a trend of overall revenues and receipts per capita can also be observed for the period between 2003 and 2006 (Perić, R. & Mahaček, D., 2009). By comparing revenues and receipts per capita in 2011 with 2003 data, we see that Brod-Posavina County still realized the lowest revenues and receipts per capita. That means that the said county failed to increase the realization of its budget revenues per capita.

The fiscal capacity of some units is below average, and it affects satisfaction of public needs in a way that some units are more successful, while others are less successful in serving the public. The differences in fiscal capacity affect the satisfaction of public needs and there is a need for creating additional financing sources, these are most often grants, which are collected from the state budget. Authors (Jelčić, Bejaković, 2012) suggest that the differences in fiscal capacity are characteristic not only for cities and municipalities, but also for counties, and that there is a gap present between the financing of a larger number of units of local (regional) self-governments and transferred public authorities and public revenues with which they settle public expenditures.

3 Revenue realization according to local government level

Below is an overview of realized revenues and receipts according to a local government level. That implies the realization of cities, counties and municipalities in the overall realization. The paper explores how much cities, municipalities and counties participate in the overall realization at state level. After that, one county is taken, for which the participation of local government units in the realization of overall revenues is observed.

3.1 Overall revenue realization at local government units' level in the Republic of Croatia

Revenue realization according to local government levels is important for determining which level of government is most involved in the financing of public needs. Financing activities of local importance in the Republic of Croatia are carried out through three levels of local government: counties, cities and municipalities.

The City of Zagreb budget is used for financing most of the needs of the local government, in 2010 in the amount of HRK 6,510,542,935.00 or 28.7%, and the budgets of other local units is used in the amount of HRK 16,204,160,676.00, or 71.3%. In total revenues and receipts in 2010 the proportion of cities amounted to 39.6%, municipalities achieved the participation of 16.2% and counties had a participation of 15.5%. In total revenues and receipts in 2011 the participation of the City of Zagreb was 28.8%, cities participated with 28.8%, municipalities with 15.9% and counties had a participation of 16.0% (Table 3).

Table 3 Revenues and receipts by government level

Government level	Year	Revenues (HRK)	Share in %	Indices for 2011 and 2012 (2010 = 100)	Index 2012 / 2011
1	2	3	4	5	6
City of Zagreb	2010	6,510.542.935	28.7	100	101.3
	2011	6,320.883.078	28.8	97.1	
	2012	6,404.786.876	29.1	98.4	
counties - 20	2010	3,518.936.408	15.5	100	100.8
	2011	3,506.690.196	16.0	99.7	
	2012	3,535.587.768	16.1	100.5	

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cities - 126	2010	9,002.684.039	39.6	100	100.6
	2011	8,612.042.381	39.3	95.7	
	2012	8,659.608.813	39.4	96.2	
municipalities - 429	2010	3,682.540.229	16.2	100	97.5
	2011	3,479.431.148	15.9	94.5	
	2012	3,392.297.705	15.4	92.1	
Total - 576	2010	22,714.703.611	100	100	100.3
	2011	21,919.046.803	100	96.5	
	2012	21,992.281.162	100	96.8	

Source: author's calculations from data reports in the work of State Audit Office for 2011 p. 37; 2012 p. 39; 2013 p.29

In overall revenues and receipts in 2012, the City of Zagreb participated with 29.1%, cities with 39.4%, municipalities with 15.4%, and counties with 16.1%. From calculations using the index, by weighting realizations in 2011, i.e. 2012 against the baseline year of 2010, we noticed that all indexes are under 100, i.e. compared to 2010, the realization is lower for the City of Zagreb, cities' and municipalities, and only counties have achieved higher realization in 2012 compared to 2010. For the City of Zagreb, counties and cities, with the exception of municipalities, for 2012, compared to 2011, the index is higher than 100, i.e. the achievement is higher than in 2011. On the basis of presented data and their analysis, we made conclusions on the participation of government levels in funding at the state level.

3.2 Total revenue realization at county level

Total revenue realization at the county level below is observed at the example of one of the counties in the Republic of Croatia. The data was investigated for Vukovar-Srijem County for the period from 2010 to 2012.

City budgets are used for financing most of the needs at the county level, in 2010 the share was 48.2%, the share of county budgets was 27.1%, while the municipality budgets achieved a share of 24.7%. In 2011 most of the needs were additionally financed through the budgets of cities whose share amounted to 47.5%, county budgets participated with 27.8% and municipality budget share amounted to 24.7%. In 2012 city budgets remained the most important source of revenue with a share of 45.0%, followed by county budget with 29.4%, while municipalities continued to account for the smallest share, i.e. 25.6%. Of all the cities in the observed county the most significant participation is achieved by the city of Vinkovci, followed by Vukovar, while cities of Županja, Ilok and Otok account for a significantly smaller participation. Realized revenues and receipts of Vukovar-Srijem County in the period from 2010 to 2012 were analysed by the index, by weighting realization for 2011 or 2012 compared to base year 2010. We observe that the indexes are below 100, except for the realization achieved by the city of Županja, whose realization in 2011 compared to 2010 increased by 33.2%. Regarding county budget, cities of Ilok and Vukovar budgets and municipalities' budgets, the realization in 2012 was higher compared to 2011. (Table 4).

Table 4 Overall revenues and receipts of Vukovar-Srijem County budget from 2010 to 2012

Name	Overall revenues and receipts (in HRK)			Share in %			The index for 2011. (2010 = 100)	The index for the 2012th (2010 = 100)	Index 2012th/ 2011
	2010	2011	2012	2010	2011	2012			
1	2	3	4	5	6	7	8	9	10
a) Vukovar-Srijem County	179.110.070	159.935.925	166.867.898	27.1	27.8	29.4	89.3	93.2	104.3
City of Ilok	17.355.107	14.630.450	15.232.234	2.7	2.6	2.7	84.3	87.8	104.1
City of Otok	17.2043.79	13.477.328	12.282.123	2.6	2.3	2.2	78.3	71.4	91.1
City of Vinkovci	131.475.786	91.385.946	85.304.968	19.9	15.9	15.0	69.5	64.9	93.3

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City of Vukovar	120.370.648	110.869.802	117.414.811	18.2	19.3	20.7	92.1	97.5	105.9
City of Županja	31.757.419	42.311.814	25.085.164	4.8	7.4	4.4	133.2	79.0	59.3
b) Total cities	318.163.339	272.675.340	255.319.300	48.2	47.5	45.0	85.7	80.2	93.6
c) Total municipalities	162.659.759	141.790.291	144.805.355	24.7	24.7	25.6	87.2	89.0	102.1
TOTAL (a + b + c)	659.933.168	574.401.556	566.992.553	100	100	100	87.0	85.9	98.7

Source: Authors' calculations according to the data of the Ministry of Finance for 2010 – 2014

Comparing the funding at the level of Vukovar-Srijem County with the financing of local and regional self-government units, in the said County the most significant participants are city budgets, as well as at the level of all units, followed by the county budget, and municipalities' budgets.

4 Discussion

The differences in the counties' development are the result of differences in the development level of cities and municipalities in the area of individual counties, i.e. realized revenues and receipts of cities and municipalities. The decrease in revenue and receipts per capita of cities and municipalities within the County has led to a decrease of income per capita at the county level. Furthermore, it would be necessary to determine the revenues and receipts per capita for all cities and municipalities, which could not have been done in this paper due to the volume of work. This would serve to recognize the similarities and differences in the size of revenues realized, i.e. which local units have more opportunities to meet the public needs. Furthermore, there is a need for a detailed analysis of the structure of budget revenues in order to determine what caused the said differences and what affected them.

It is necessary to examine whether there are opportunities to increase budget revenues, in particular revenues of municipalities in order to make their role in the financing and meeting the public needs more significant.

Conclusion

Based on the research on the trend of overall realization of revenues of local and regional self-government units and their analysis from 2010 to 2012, it was concluded that the overall revenues and receipts at the level of all counties in 2012 compared to 2010 decreased, and the same was observed in one county we observed. The reduction of budget revenues affects the reduction of financing public needs.

Overall revenues and receipts per capita in certain counties, as well as in Vukovar-Srijem County, deviate from the established average level of all counties, indicating differences in the development of counties. The differences in the counties' development are the result of differences in the development of cities and municipalities in the area of individual counties, i.e. revenues and receipts realization of cities and municipalities, which has been shown in the example of Vukovar-Srijem County.

It was found that the same counties have been realizing small budget revenues for a long time while other counties have been realizing significant revenues. The realization of revenues at the county level included the realization of revenues of cities and municipalities in their area. Counties are composed of a different number of cities and municipalities which partially affects the overall realization of revenues.

A conclusion has been made on the participation of certain levels of local governments in overall revenues and receipts. The paper determined a significant level of participation in funding at the level of budgets of cities, followed by counties, with municipalities' budgets at the end. At the level of all local and regional self-government units it has been determined that the most important source of funding are city budgets, followed by counties and then municipalities. In an area of a county as a local and regional self-government unit, the most significant is financing from city budgets, followed by the budget of the county and municipalities' budget at the end, i.e. the same case as for the state level.

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*IMPACT OF EU FUNDS ON THE DEVELOPMENT OF TOURISM IN
POLAND*

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Abstract

Purpose of the article The European Regional Development Fund is one of the most important instruments of the regional policy management. This instrument, addressed directly to the regions, is aimed at supporting the implementation of regional policy objectives. Until present there are no universally accepted indicators allowing to identify the effects of implementation of this instrument. In the context of the diagnosed research gap, the basic research problem is whether the state interventionism aimed at the development of the tourism sector contributes to positive developmental change in this sector. The undertaken issue concerning the impact of public intervention on the development of the tourism sector is innovative. On the one hand, the effects of public intervention cannot be clearly determined, on the other hand, so far no uniform tools to measure the effects of public intervention were developed. Also, there are no adopted meters, whose data would be widely available, enabling the interregional comparability. The presented research results fill the gap in the theory and practice.

Scientific aim This article aims to analyse the impact of the EU financial instruments implemented at regional level on the development of the tourism sector. The specific objectives relate to the analysis of the impact of the EU instruments on the development of tourism enterprises, including the dynamics of changes in the number of enterprises in the tourism sector, employment in the tourism sector, and the dynamics of added value.

Methodology/methods In determining the level of the integrated economic effect of public intervention, the methodology of the New Public Management (NPM) concept was applied. In the study on the impact of public intervention on the development of the tourism sector statistical data was used. The study covered the period 2009-2014.

Findings Public intervention contributes to the creation of new jobs and has a positive impact on employment in the tourism sector. Co-financing of investments providing services related to accommodation as well as leisure services has a beneficial effect on the dynamics of the development of enterprises providing accommodation and catering services. The increase in employment in facilities newly created as a result of public intervention contributes to the growth in the dynamics of the creation of added value and the suppression of the general trend of decline in employment.

Conclusions It should be stated that the integrated effect of the public intervention of the Podlaskie Voivodeship in the years 2007-2013 with the use of EU funds from the Regional Operational Programme of the Podlaskie Voivodeship exhibits a positive balance. It significantly affects the growth of entrepreneurship in the tourism sector and the value added generated in this sector. It contributes significantly to the development of the tourism sector.

Keywords: Public subsidies, Regional Policy, Management Results, EU funds

JEL Classification: H71, R51

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Introduction

Financing of the tourism sector through subsidies from the EU funds requires a detailed analysis, taking the effects of their impact on the tourism sector into account as far as possible. The complexity of the tourism economy makes the effects of the impact of the financial instruments in the tourism sector to be, in most cases, difficult to identify and evaluate. The reason for this is that the effects are transferred through environmental, social and economic subsidies. Another causing factor is that the effects affecting the development of the tourism sector are derived from a variety of services directly included in the tourist services (i.a., accommodation services, catering, travel agencies, guiding services, tourist equipment rental companies) as well as the accompanying services, identified, among others, with the area of recreation, culture, entertainment or business. The difficulty with identifying also consists in the fact that there are two directions of the EU financial support for the tourism sector: direct, which involves financial transfers for very specific goods, and indirect, associated with the formation of the material and regulatory business environment.

In practice, public intervention aims to stimulate the economic activity of a region and / or sector, depending on the size of the dedicated financial resources. Unfortunately, previous studies allow for identification of the impact of public intervention at the level of one project (one investment). Therefore, the examination of only the direct effects that arise as a result of public intervention is not possible. It is necessary to take into account all the effects of both the public intervention (direct), and the ones observed as a result of revival of the investment activity (intermediate). In the sector studies at the regional level, these effects should be defined as an integrated effect. The integrated effect is the effect experienced by the sector of the economy, at which the state intervention was directed.

Difficulties in studying the effects of public intervention consist in the fact that empirical data allowing to assess which types of effects are important for the development of the tourism sector, and to what extent, which can be ignored, is not available. Also the indicators, which could serve as estimates for the analysis and evaluation of the effects associated with investment projects in the tourist region are not available. At the regional level, the study of the integrated effect for the tourism sector is innovative. No attempt was made to identify the effects of public intervention and no uniform measurement tools of such effects were developed. Moreover, there are no adopted meters, whose data would be widely available, enabling the interregional comparability.

This article aims to analyse the impact of the EU financial instruments implemented at the regional level on the development of the tourism sector. The specific objectives relate to the analysis of the impact of the EU instruments on the tourism sector, including the dynamics of changes in the number of enterprises in the tourism sector, employment and added value. In the study on the impact of public intervention on the development of the tourism sector statistical data was used. The study covered the period 2008-2014.

1 Review of existing studies

A literature review relating to the scope of research on the impact of the EU financial instruments on the tourism sector indicates that this is a new subject of interest in the economics of tourism, and this problem is undertaken by few researchers.

Research is being conducted at the level of the country, region and company economy. The research is conducted on the financial plane and in the form of a balanced scorecard proposed by R.S. Kaplan and D.P. Norton. On the financial plane, the effectiveness of non-repayable grants is researched, among others, with the use of theoretical GDE models and qualitative analyses (Dwyer, Forsyth, Spurr, 2004) and open equilibrium models (Schubert, Brida 2008), as well as analyses of the impact of the investment on regional tourism functions (Lee, Taylor 2005, Fourie, Santana – Gallego 2011).

Attempts to study the impact of subsidies on the local tourist economy and the competitiveness of the company with regard to specific effects adopted by the political agenda are undertaken. Their results are inconclusive. Some researchers have suggested that grants produce benefits from the resulting advantage only for a short term (Bronzini, De Blasio 2006), also the positive impact on the employment effects is undermined (Gabe, Kraybill 2002) as well as the efficiency and productivity of workers. However, there is also evidence of the positive impact of investments from non-repayable grants on employment (Carlucci, Pellegrini 2005). The largest number of jobs is created in the private sector (Panfiluk 2013a). In the public sector, jobs are created as a result of the realization of new investments of supra-local and supra-regional importance (Panfiluk 2013b). Detailed study of the impact of subsidies on the condition of business is conducted for the four identified outcomes: employment, profit, productivity of work and entrepreneurship confirm the positive impact on employment, short-term profits, but indicate that entrepreneurship and labour productivity shows a downward trend (Bernini, Pellegrini 2011; Panfiluk 2015b). Research on the basis of the concept of a multi-faceted

evaluation of the effectiveness of the organization of a balanced scorecard, conducted in reference to the degree of implementation of the strategy of the company is also ambiguous (Łoś 2010). In Polish literature, the study of the impact of financial instruments refers to the indication of the utilization of EU funds (Gardzińska 2010, Niedziółka 2010), types of investments, or even the types of the implemented projects, the spatial distribution of resources (Stawicki 2012, Panfiluk 2010), the effectiveness of obtaining resources (Panfiluk 2010; Szymańska 2010), the co-financing of tourist investments (Januszewski 2010) or the impact on tourism activation (Janicka 2012). There are few attempts to determine the externalities arising from the implementation of the activities financed by the EU (Panfiluk 2012; Panfiluk 2015a). The research on the impact of EU funds on the economy of Polish regions and the convergence with the European Union is conducted at the national level, our is conducted at the regional level (Panfiluk 2015b, Sirbu 2014; Bondareva, Zatrochora, 2014). These are qualitative studies indicating changes that have arisen as a result of non-repayable grants. They do not undertake the analysis of the effectiveness of their use. Therefore, there is a necessity to undertake further studies in the field of theoretical analyses of the assessment of the effectiveness of the non-reimbursable financial instruments. In addition, the models adopted for the study for the tourism sector and the applied measures of classification are treated as equivalent. The available studies indicate that the investment / facility, and therefore the effect of subsidies, generates different efficiency and variably affects the development of the tourism sector (Crouch, 2007).

Developed by the European Commission, Working Document No. 6), the manual discusses the methodology for the measurement of the investments subsidized by the EU (European Commission, 2007). In practice, it requires time-consuming and labor-intensive specific research (Panfiluk 2015b).

2 Characteristics of the study area

The study was conducted for the region of the Podlaskie Voivodship. The region of Podlasie was selected for the *Ex - post evaluation of Cohesion Policy Programmes 2007 - 2013 - WP9: Culture & Tourism* study by the European Commission in 2015, as a representative region of Poland. Analysis of the tourism potential of the Podlaskie Voivodship with respect to the EU regions showed that among the 283 EU regions at NUTS 2 level, Podlaskie Voivodship belongs to the group of 68 regions with the lowest tourist potential (Dębkowska, Szymańska, 2015). Due to the tourist values and the level of development of the tourism sector, the region can be compared with the Polish region of Lubelskie and Lubuskie. The regions at a high level of the tourism sector development in Poland include the region of Malopolska, Lower Silesia and Warmia - Mazury.

It should be emphasized that comparative statistical analyses alone, without perceiving a wider range of conditions and specificity of the tested region, are not enough to draw clear conclusions. This region, due to the natural resources, is the most valuable region of Poland. Natural areas, particularly valuable worldwide, are protected by law. Four national parks, three landscape parks, 83 nature reserves, NATURA 2000 sites, 13 protected landscape areas, 262 ecological grounds, a nature and landscape complex, three documentary stations and 1932 natural monuments are here. High rank of the region is illustrated by the international status given to four of them. These are: Bialowieza National Park - the area of strict protection, including the biosphere reserve which is the natural object of the UNESCO World Heritage Site, and the Biebrza National Park, Narew National Park, and Wigry National Park - protected under the international Ramsar convention (Dobrzański et al., 2014, Borkowska – Niszczota, 2014).

Naturalness (non-substitutability) of natural resources, uniqueness, preciousness, rarity and the impossibility of imitation causes them to be a significant resource for creating competitive advantage of the region (Barney 1994). For a number of years, a progressive increase in tourist traffic has been observed in the region. Implementation of the objectives of the regional tourism policy, of which management in accordance with the principles of sustainable development is the fundamental dimension, is the guarantee of sustainability of the natural resources and development (Kiryluk 2014; 2015).

3 Methodology of research

In determining the level of the integrated economic effect of public intervention, the methodology of the New Public Management (NPM) concept was applied. Management evaluation oriented on achieving results rather than on processes is the essence of this concept. This method is used to assess the implementation of public programs and uses the 3E principle: *economy* (savings), *efficiency*, *effectiveness* (Zawicki, 2002). This means that identifiable and measurable effects (results) are the basis for assessment of the activities of public entities. Taking into consideration the extension of the evaluation of the European Regional Development Fund management system, in order to assess the effects of the ERDF implementation, this principle should be extended with the principle of utility (Panfiluk, 2015a).

In the study, the thesis that the implementation of tourist projects co-financed by the EU has a positive effect on the growth of tourism potential and, consequently, contributes to the development of the tourism sector was adopted. In the analysis of the impact of the tourism sector on the socio-economic development, economic activities, defined with the code in accordance with the Polish Classification of Economic Activities (PKD) 2007, i.e.: accommodation (Section I, Chapter 55); services related to catering (Section I, Chapter 56) were adopted as touristic businesses.

In this study the success rate corresponding to the following question was evaluated: Did public intervention have an impact on the development of the touristic sector in the region? The observation concerned the indirect effects observed for the tourism sector. In the study, the following measures were adopted:

- the number of jobs in FTEs, which were created as a result of public intervention of ROP 2007 - 2013,
- the number of enterprises in the tourism sector and the dynamics of its changes in the years 2009 - 2014,
- the number of jobs in the tourism sector and the dynamics of its changes in the years 2009 - 2014,
- added value in the tourism sector and the dynamics of its changes in the years 2009-2014.

In the study on the impact of public intervention on the development of the tourism sector statistical data was used.

In order to determine the dynamics of changes in the tourism sector the benchmarking method was applied. Comparisons were made with respect to the Polish regions at NUTS 2 level, with a higher and equal level of development of the tourism sector in accordance with the ranking of the NUTS 2 regions (2015), where the tourism sector is one of the dominant objectives of the regional policy. These are: Malopolska (66th position among the 283 EU regions at the NUTS 2 level), Lower Silesia (114th position among the EU's 283 regions at the NUTS 2 level), Warmia - Mazury (position 167 among 283 EU regions at the NUTS 2 level) Lublin Voivodeship (position 234 among 283 EU regions at the NUTS 2 level), lubuskie (238th position among 283 EU regions at the NUTS 2 level) (Dębkowska, Szymańska 2015). Representative regions with the highest level of development of the tourism sector (Malopolska, Lower Silesia), developing region (Warmia - Mazury) and the region with the same level of development (Lublin, Lubuskie) were selected.

4 Analysis of the results

A detailed analysis of the number of *strictly* touristic entities, in accordance with the PCA registered in the CSO database, indicates the existence of a positive balance in terms of an increase in the number of businesses and amounts to 1.17, whereas the higher dynamics occurs in activities related to accommodation (1.52) rather than in activities related to catering (1.09). Detailed results are presented in Table 1.

Table 1 Dynamics of changes in the number of entities in the tourism sector per 10 thousand residents in th Podlaskie Voivodeship in the years 2009 - 2014

Touristic sector	2009	2014	Dynamics
Section I (activities connected to accommodation and catering – total	2023	2359	1,17
including: section I unit 56 (activities connected with accommodation)	374	568	1,52
including: section I unit 56 (activities connected with accommodation)	1649	1791	1,09

Source: own work, based on the Local Data Bank, access: www.stat.gov.pl/bdl, access date: 20/01/2016.

Table 2 Dynamics of change in the number of tourist entities in the years 2009 -2014 of the Podlaskie Voivodeship in view of selected Voivodships of Poland

Touristic sector	NUTS 2 REGION					
	Podlasie	Malopolska	Lower Silesia	Warmia and Mazury	Lubelskie	Lubuskie
Section I (activities connected to accommodation and catering – total)	1,17	1,12	1,10	1,11	1,06	0,98
including: section I unit 56 (activities connected with accommodation)	1,52	1,12	1,23	1,23	1,37	1,17
including: section I unit 56 (activities connected with accommodation)	1,09	1,12	1,06	1,06	1,01	0,95

Source: own work, based on the Local Data Bank, access: www.stat.gov.pl/bdl, access date: 20/01/2016.

Analysis of the level of development of the Podlaskie Voivodeship tourism sector, carried out on the basis of the dynamics of change of the indicator of the number of entities in Section I per 10 thousand inhabitants in the years 2009 -2013 indicates that the Podlaskie region achieved the highest dynamics of growth of service providers related to accommodating and catering. It is higher by 0.10 points from the regions with the highest level of development of the tourism sector (Malopolska, Lower Silesia). Clearly higher dynamics is noted in the development of services related to the accommodation (1.52) in comparison to the region of Malopolska (1.09), but the regions of Lower Silesia (1.60) and the Warmia - Mazury (1.46) reached similar dynamics. Significantly lower dynamics was observed in the services related to catering. The dynamics of development of businesses providing services related to catering is at a similar level in all the analysed regions (Table 2).

As a result of public intervention within the framework of the Regional Operational Programmes for the years 2007 -2013 in the Podlaskie region, 802.33 full-time jobs were created, including 513 jobs in the services related to accommodation. The analysis of the level of impact of public intervention in other Polish regions indicates a similar impact. In the regions leading in the development of tourism, as a result of public intervention the following were created: Malopolska - 761.33; Lower Silesia – 931.00; Warmia - Mazury - 1033.50, respectively, in the Lublin and Lubuskie region significantly lower levels of impact in the regions were reported (Table 3). The detailed results of research on the types of investment and the number of jobs created in the region indicate that most of the jobs were created in the newly established tourist and recreational facilities (Panfiluk 2015b).

Table 3 The number of jobs created in the tourism sector in Section I and recreational services in public intervention RPO 2007 -2013.

Touristic sector	NUTS 2 REGION					
	Podlasie	Malopolska	Lower Silesia	Warmia and Mazury	Lubelskie	Lubuskie
the number of jobs created in Section I (activities associated with accommodation and catering under the grant in the tourism sector)	802,33	761,33	931,00	1133,50	372,00	268,00

Source: data obtained from the Marshall Offices of the Voivodships, state 30.06.2015 year.

Detailed analysis of the dynamics of changes in the number of employees per 10 thousand residents in Section I in the years 2009 - 2013 indicates that there is a negative balance. This means that during that period there was a decrease in employment (Table 4).

Table 4 Employment per 10 thousand residents and dynamics of employment per 10 thousand residents in the tourism sector in Podlaskie Voivodship in the years 2009 - 2014 and the selected Voivodships

Touristic sector	NUTS 2 REGION					
	Podlasie	Malopolska	Lower Silesia	Warmia and Mazury	Lubelskie	Lubuskie
2009	28,66	61,54	61,01	41,59	24,66	37,09
2014	26,49	58,78	61,01	31,99	22,16	31,08
the dynamics of changes in employment in the years 2009 -2013	0,92	0,96	1,00	0,77	0,90	0,84

Source: own work, based on the Local Data Bank, access: www.stat.gov.pl/bdl, access date: 20/01/2016.

Detailed analysis of the ratio of value added at current prices per 10 thousand residents indicates the existence of discrepancies in its formation between the analysed regions. The highest increase occurred in Lower Silesia (by 1.26 points per 10 thousand inhabitants) and subsequently high growth was recorded in Podlaskie (by 1.18 points) in the Warmia - Mazury by 1.13 points, and in the Malopolska Voivodeship by 1.08 points. In Lubuskie a decline in the value added by 0.01 points was noted (Table 5).

Table 5 Value added at current prices per 10 thousand residents in the Podlaskie Voivodeship and selected Voivodeships of Poland

Touristic sector	NUTS 2 REGION					
	Podlasie	Malopolska	Lower Silesia	Warmia and Mazury	Lubelskie	Lubuskie
2009	259,72	474,79	369,66	313,92	254,03	320,78
2014	306,29	512,71	464,61	355,93	293,12	319,15
the dynamics of changes in the value added in the years 2009 -2014	1,18	1,08	1,26	1,13	1,15	0,99

Source: own study based on the Local Data Bank, access: www.stat.gov.pl/bdl, access date: 20/01/2016.

Comparison of the index of change in the number of enterprises per 10 thousand residents in Section I (services related to the accommodation and catering) in the years 2009 to 2014 (Table 2) with the indicator of dynamics of changes in the value added at current prices per 10 thousand inhabitants in the years 2009 -2014 (Table 5) leads to the conclusion that in the analysed Voivodeships the dynamics of these indicators shows similar diversification. From 0.1 to 0.6 points higher dynamics of value added growth rate from the dynamics of an increase in the number of enterprises is noted. It should be brought to the attention that in the case of Lower Silesia a lower dynamics of enterprise development (1.09) and much higher growth rate of value added (1.26) is noticed.

Analysis of the extent of the increase in value added per 10 thousand residents indicates that in Podlaskie Voivodeship the growth exceeds two Voivodeships (Malopolska and Warmia - Mazury) with a leading position in the development of the tourism sector and significantly exceeds the Voivodeships with a comparable level of development of the tourism sector (lubelskie and lubuskie). Lower Silesia has developed the highest added value.

Discussion

The analysis of the level of public intervention in the Podlaskie Voivodship, expressed in the number of full-time jobs created, also in services related to accommodation, indicates a high level of intervention. A total of 802.33 jobs were created, 64% of which were positions created in the services related to accommodation in the private sector. The level of intervention, determined by the number of jobs created for the analysed region is comparable to the level of public intervention in the regions with an established position of the tourism sector in Poland. The results show the positive impact of public intervention on employment. The evidence of the positive impact of investments carried out with the use of non-repayable grants on employment is also confirmed by research (Carlucci, Pellegruini 2005).

The consequence of the intervention of the ROP 2007 -2013 in the tourism sector in the Podlaskie Voivodeship was the increase in the number of providers of services related to accommodation and catering. It is

evidenced by the higher dynamics of the number of enterprises in Section I, Chapter 55 (accommodation services) than the dynamics of the number of enterprises in Section I, Chapter 55 (accommodation services) of the regions with a comparable status of development of the tourism sector. This growth rate is also higher in comparison to the regions with a high level of development of the tourism sector.

The comparison of the dynamics of changes in the number of enterprises in Section I and the level of intervention of the ROP allows us to conclude that public intervention has a positive impact on the growth in the number of enterprises in Section I. In particular, the high growth dynamics of businesses providing services relating to accommodation. This allows us to conclude that the dynamics of the number of companies are significantly influenced by the level of intervention: the higher the level of intervention of the higher dynamics.

A comparable phenomenon was observed in the case of growth of the value added in current prices per 10 thousand residents, and its dynamics. The Podlaskie Voivodeship recorded a higher growth of the added value in current prices and higher dynamics of its growth, compared to most other provinces with a high level of development of tourism, and the regions with a comparable level of development of the tourism sector. It can therefore be concluded that public intervention has a positive effect on the production of the added value and its dynamics of growth: the higher the level of intervention, the higher the growth rate of the added value.

Detailed analysis of employment in section I points to a gradual decline in employment. Gradual decline in employment in the tourism sector is associated with an increase in work efficiency of the human capital. It is one of the elements of the competitive activities undertaken in the service sector. The undertaken public intervention activities and the co-financing of new full-time jobs requires the subsidized companies to maintain them. Therefore, two contradictory phenomena in the area of employment can be observed. On the one hand, enterprises in Section I, subsidized with funds from the ROP in the years 2007 - 2013 increase the number of employees, and the operators unsubsidized from ROP in the years 2007 - 2013 in Section I, in order to address the competition and lower the fixed costs strive to increase labour productivity of the human capital, the consequence of which in the first period is a decline in employment. There is a danger that in the long term the subsidized entities may be less competitive. The lower productivity of the human capital may become the primary reason for the lower competitive position. Similar results were obtained by (Bernini, Pellegrini, 2013). The negative effects of public intervention on the condition of the enterprises are also indicated by the results of research by (Bernini, Pellegrini, 2011), who indicate that labour productivity of the subsidized entities in the long term exhibits a downward trend. Similar results were achieved also by (Gabe, Kraynill, 2002).

In the case where public intervention contributes to employment growth in newly established investments, as in the case of the analyzed region, it is no longer possible to speak of a decline in the efficiency of human capital. It should be noted, that the positive effects of employment translate into the generation of added value and its growth dynamics and the inhibition of the general trend of decline in employment.

Conclusions

Public intervention contributes to the creation of new jobs and has a positive impact on employment in the tourism sector. Co-financing of investments providing services related to accommodation as well as leisure services has a beneficial effect on the dynamics of the development of enterprises providing accommodation and catering services. The increase in employment in facilities newly created as a result of public intervention contributes to the growth in the dynamics of the creation of added value and the suppression of the general trend of decline in employment.

In conclusion, it should be stated that the integrated effect of the public intervention of the Podlaskie Voivodeship in the years 2007 -2013 with the use of EU funds from the Regional Operational Programme of the Podlaskie Voivodeship exhibits a positive balance. It significantly affects the growth of entrepreneurship in the tourism sector and the value added generated in this sector. It contributes significantly to the development of the tourism sector.

The tourism policy of the region and the financial instruments, the use of which contributes to the achievement of the integrated positive effect allows for planned preparation of the region for the reception of an increasing number of tourists. For a region, which has unique tourist attractions with low resistance to human pressure, it creates the only opportunity not only to preserve the natural values, but also to achieve economic development of the region.

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*IMPACT OF THE GOVERNMENT BORROWING POLICY ON THE LONG -
TERM GDP GROWTH*

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Abstract

Purpose of the article The growth of the government debt usually is not steady in time. The government may choose different policies: to borrow more during recession period to compensate for the low GDP growth rate, or borrow during intensive growth to stimulate accumulation of wealth and creation of the “safety cushion” for the future recession. The aim of the present research is to explore how the borrowing policy affects long- term GDP growth.

Methodology/methods The research used World Bank statistical data over the period of 2003 – 2012. Time series of GDP and government debt data were analysed to correlate annual debt increment with the GDP growth rate. The value of the correlation coefficient was used to group countries following their borrowing policies. Further, the indicator of long - term GDP growth was analysed for each group.

Scientific aim of the paper was 1) to explore borrowing policies of the world countries and 2) to demonstrate, that long – term GDP growth of countries that borrows more in recession, differs from one of countries that borrows in the growth periods.

Findings Among 176 world countries, 42 countries’ debt tends to increase more at the periods of weak GDP growth. For 12 countries, the debt grows faster at the periods of intensive economic growth. Other 122 countries does not demonstrated any correlation between GDP growth rate and debt increment rate. On average, the long-term GDP growth appears to be greater in the group of countries that borrows more in the growth period. On the contrary, the average growth rate was lower in the group of countries, borrowing in the recession period.

Conclusions Although present research does not answered question in what extend empirical findings corresponds to the documented government debt policies of the world countries, the general tendency may imply, that borrowing in the growth period is more sustainable debt policy, that helps to withstand economic periodicity.

Keywords: government debt, borrowing policy, GDP growth

JEL Classification: H63, H68

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Introduction

Nowadays, around 96% of the all countries around the world intensively use financing, borrowed both at the foreign and domestic markets. The total value of the world state debt by estimates exceeds 57 trillion USD. Nevertheless, the influence of the government debt on the economic development is still not clear (Ludvigson, 1996; US Debt Clock, 2014). From one hand, Ricardian economists argue the debt does neither stimulate nor inhibit economic growth (Barro, 1987). This point of view is supported by the analysis of real countries data (Semjonova, 2014). In practice, very big government debt of some countries had so tremendous negative effect, that International Monetary Fund (IMF) and World Bank was forced to launch poverty reducing Heavily Indebted Poor Countries (HIPC) initiative (International Monetary Fund, 2013a). In this framework, the debt of the poorest countries was “written off” in the period from 2003 to 2011.

From the other hand, recent researches demonstrated some „growth threshold”: the debt has stimulating effect, being less than 60% - 70% of GDP, but poses negative impact, being exceeding this level (Checherita-Westphal & Rother, 2012; Afonso & Jalles 2013). Some breakdown of these research were concentration on the “old EU countries” (Checherita-Westphal & Rother, 2012) and neglecting 2008 – 2010 recession (Afonso & Jalles, 2013). In attempt to overcome this recession, number of countries - Greece, Portugal, Italy etc., had increased borrowing, due to this its debt rose up at the fast rate (Semjonova, 2012).

The latter examples demonstrated this borrowing take place as an urgent rescue measure. Besides, it is well – known, that economic has cyclic development, when the periods of growth are followed by the periods of recession. In this extent, one could discuss the question when should country borrow: in a recession, to stimulate shrinking demand and vitalise economic, or in the period of growth, to stimulate accumulation of wealth and create, like scriptural Joseph, “safety cushion” for following recession period. For the purpose of the present paper, one could address the choice of the proper time to borrow as “borrowing policy”.

The aim of the present research is to explore the borrowing policies of the world countries and to evaluate in what extent the borrowing policy affected GDP growth over recession period. For this, the period from 2003 to 2012, which was characterised by noticeable recession, is especially suitable. The corresponding tasks are 1) to analyse worldwide tendencies in the accumulation of the government debt and selection of the debt policy, 2) to determine long-term growth indicator and 3) to explore relationship between debt policy and GDP growth indicator.

1 Data and methodology

The object of the research is the world countries’ economies. The research is based on public available data on 176 world countries from IMF and World Bank databases (World Economic Outlook Databases, 2013, World Bank Open Data, 2013). Selection of these 176 countries was governed entirely by data availability: countries with no data were censored out. The analysis covered period from 2003 to 2011. The beginning of the period was chosen to coincide with the start of HIPC initiative. As to the end of the period, in 2012 the economic indicators start to improve after recession, but the data for 2013 still was not available in full, so 2012 was chosen.

In the present paper, the following indicators that characterize accumulation of debt and current economic situation were analysed:

- GDP series over the period from 2003 to 2012, measured in billions of USD, current prices;
- Government debt to GDP ratio series from 2003 to 2012.

The GDP series were used to calculate GDP growth rate r for the year i as

$$r_i = (GDP_i - GDP_{i-1}) / GDP_{i-1} \cdot 100\% \quad (1)$$

The debt series were used to calculate debt increment rate a in percent from GDP for the year i as

$$a_i = (Debt_i - Debt_{i-1}) / GDP_{i-1} \cdot 100\% \quad (2)$$

The long – term GDP growth indicator R was calculated as gross relative GDP increment over the whole period of observation:

$$R = (GDP_{2012} - GDP_{2003}) / GDP_{2003} \cdot 100\% \quad (3)$$

For each country, one has calculated the Pearson correlation coefficient between GDP growth rate r and debt increment rate a . For the scope of the present work, the correlation coefficient was considered significant at the level of $\alpha = 0.1$. The countries, that have the negative correlation coefficient, were considered as „borrowing at recession”. This means, that the debt policy of these countries foresees intensive borrowing, when the rate of

economic growth is small. Countries with the positive correlation coefficient were classified as „borrowing at growth”, i.e. these countries tends to borrow more when the economics is growing. All other countries, that had non – significant correlation coefficient, were considered as „neutral borrower” with no particular preferences when to borrow.

The association between the borrowing policy and long – term GDP growth was studies using both one – way analysis of variance and graphical technique of box and whisker plot. The analysis of variance was performed at significance level $\alpha = 0.05$.

2 Results

From the group of 176 countries, 42 counties had negative correlation coefficient between GDP growth rate and debt accumulation rate, 12 countries had positive correlation coefficient and 122 had non – significant correlation coefficient. The grouping of countries with non – zero correlation coefficient is presented in Table I. Note, that this grouping does not correlate with the level of economic development: each group contains both developed and developing countries. The geographical regions does not play any role in the grouping, too.

Table 1 Grouping of countries by the debt policy

“Recession borrowers”				“Growth borrowers”
Armenia	El Salvador	Malawi	Sweden	Albania
Azerbaijan	Finland	Malaysia	Thailand	Angola
The Bahamas	France	Mauritania	United Kingdom	Belarus
Barbados	Guyana	New Zealand	United States	Brunei Darussalam
Canada	India	Portugal	Yemen	Democratic Republic of the Congo
Cape Verde	Ireland	Qatar	Zambia	Haiti
Costa Rica	Israel	Russia		Mexico
Croatia	Italy	Saudi Arabia		Norway
Cyprus	Kazakhstan	Serbia		Seychelles
Czech Republic	Korea	Slovenia		Sudan
Denmark	Latvia	South Africa		Suriname
Egypt	Lithuania	Spain		Turkey

Source: Author’s calculations

Figures 1 – 3 demonstrates typical examples of correlation between GDP growth rate and debt increment for all borrowers groups.

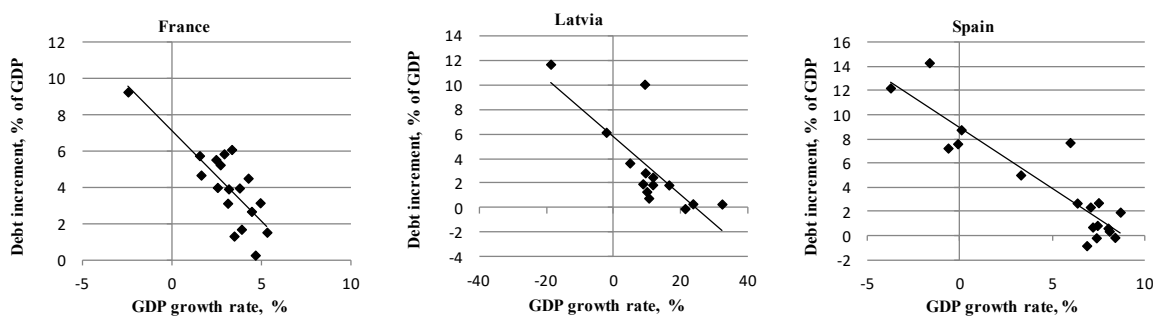


Figure 1 Correlation between GDP growth rate and debt increment for „recession borrowers”

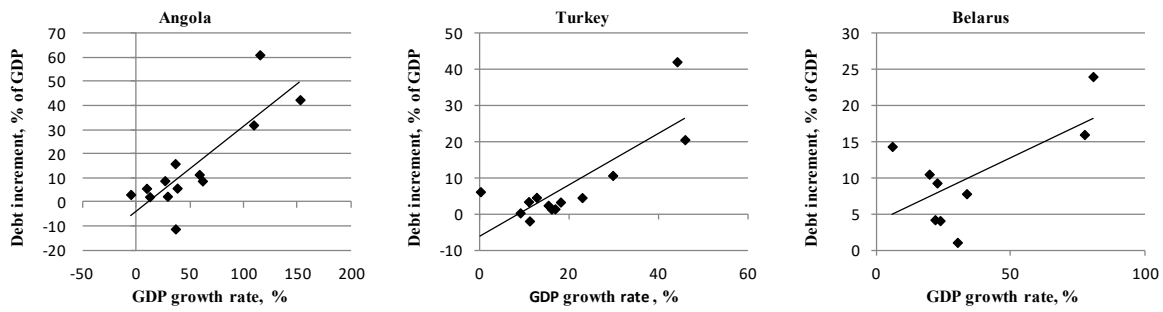


Figure 2 Correlation between GDP growth rate and debt increment for „growth borrowers”

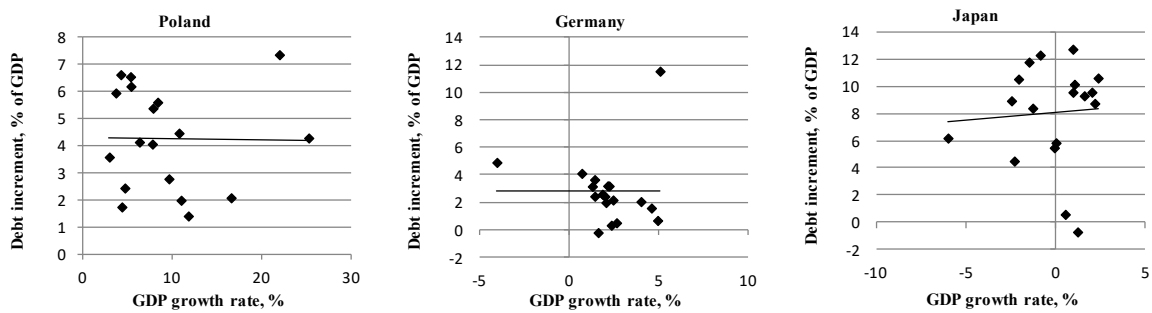


Figure 3 Correlation between GDP growth rate and debt increment for „neutral borrowers”

For the countries, presented at Fig.1 – 3, the correlation coefficients were, correspondingly: France -0.80 ($P < 0.001$), Latvia -0.78 ($P = 0.001$), Spain - 0.90 ($P < 0.001$), Angola 0.84 ($P < 0.001$), Turkey 0.80 ($P = 0.001$), Belarus 0.65 ($P = 0.06$), Poland -0.01 ($P = 0.96$), Germany 0.00 ($P = 0.99$), Japan 0.06 ($P = 0.81$).

Figure 4 demonstrates distribution of the long- term growth indicator R over the borrowing policy groups. Although there is no clear visual differences between groups, descriptive statistics, summarised in the Table 2 demonstrates both average and median values for the “growth borrowers” group exceeded one of the other two groups. The same is true for minimum values of R . In addition, the standard deviation of the average in “growth borrowers” group is noticeably greater, then in other two groups. The box – and – whiskers plot (Figure 5) as well demonstrates, that “growth borrowers” has, in general, higher long – term GDP growth rates.

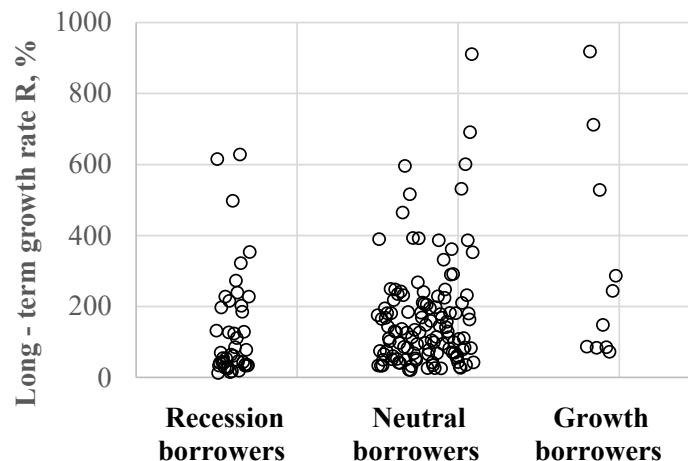


Figure 4 Long – term growth rate in a various groups of borrowers

Table 2 Long - term growth indicator statistics for different borrowers' groups

Borrowers' group	N of countries	Average R	Average R standard deviation*	Min R	Median R	Max R
"Recession borrowers"	42	138	24	13	67	628
"Neutral borrowers"	122	168	14	-5.6	128	911
"Growth borrowers"	12	299	80	73	210	919

*standard deviation of the group average $\langle R \rangle$

Source: Author's calculations

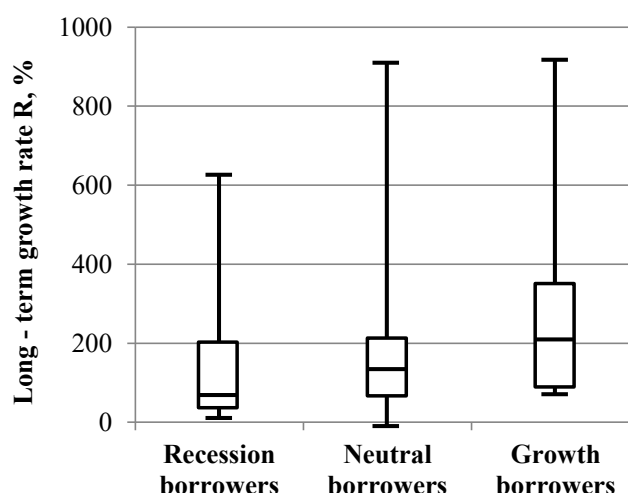


Figure 5 Box – and – whiskers plot summarisation of the long – term GDP growth rate data.

Finally, the one – way analysis of variance demonstrates significant difference between different borrowers groups ($P = 0.01$). Table 3 summarise analysis of variance data, generated by MS Excel® One-way ANOVA data analysis tool.

Table 3 Results of the analysis of variance

Source of Variation	Sum of Squares	Degrees of freedom	Variance	F	P-value	F crit
Between Groups	242345	2	121172	4.63	0.011	3.05
Within Groups	4474191	171	26164			
Total	4716537	173				

Source: Author's calculations

Individual comparison of the borrower groups using t-test demonstrates, that average growth in the "growth borrowers" group is higher then one in the "neutral borrowers" group ($P = 0.011$), but there is no significant difference between growth rates in "recession borrowers" and "neutral borrowers" groups ($P = 0.28$).

3 Discussion

Obtained results demonstrates, that, on average, the economies, where government borrows more during growth periods, performs better in a long term. Nevertheless, one have to indicate some limitation of the performed analysis. First, the present paper was concentrated only on the empirical analysis of the world statistical data. Therefore, one could not say, in what extent countries, that demonstrated particular borrowing policy indeed made it on purpose. The empirical findings reveal only 12 countries, having intensive borrowing in the growth period. The question whether such behaviour was manifestation of the government policy or just a play of chances, still could not be answered. Another aspect is surprisingly high number of countries, which does not demonstrated any correlation between GDP growth and government debt increment rate. This may be an indicator that governments does not consider the timing aspect of the state debt policy. Moreover, this question, at the best of one's knowledge, has not received due attention in the literature, as well. In future, the question of

the optimal borrowing timing should be explored in details, especially bearing in mind the purpose of borrowing and distribution of borrowed funds over the economic sectors.

The important aspect that was not analysed in the present paper, but has to be studied in future, is the question of risks and benefits, associated with the borrowing in the growth period. As an example, one may mention potential overheat of economy in the growth period *versus* reduced drop of the growth rate in the recession period.

Another important aspect of the debt policy, which was out of the scope of the present paper, is the question of the government debt payback. There is some evidences, that, given sustainable growth is provided, government may not reduce the nominal debt at all (Domar, 1944). Nevertheless, this hypothesis have to be validated in future, bearing in mind cyclicity if the economic development.

Conclusion

For the considered period, the countries of the world differed by the manner they increased their government debt. For 122 countries out of 176, the debt increment rate did not depend on the annual GDP growth rate. Besides, there are 42 countries, which debt tended to increase more at the periods of weak GDP growth. For 12 countries, the debt grew faster at the periods of intensive economic growth. This may be an evidence of the different borrowing policy of the world countries.

On average, the long-term GDP growth appears to be greater in the group of countries that borrows more in the growth period. On the contrary, the average growth rate was lower in the group of countries, borrowing in the recession period. Although the last difference lacks of statistical significance, the general tendency may indicate, that borrowing in the growth period is more sustainable debt policy that helps overcome recession caused by cyclical changes in economic. Nevertheless, longer period of observation have to be studied to make a bold conclusion on the sustainability of the long-term growth.

The future extension of the scope of the present paper should include analysis of the risks and benefits of the different borrowing models, as well as estimation of the role and consequences of the accumulation of the debt in the cycling economic, having both the growth and recession periods.

Acknowledgment

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*COMPLIANCE COSTS: SMALL AND MEDIUM SIZE ENTERPRISES
ANALYSIS*

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Abstract

Purpose of the article Small and medium sized enterprises have very important position in the EU economy, mainly in the area of growth and employment. However, small and medium sized enterprises face great deal of obstacles, mainly in the form of increased level of regulation resulting into excessive compliance costs of taxation. Therefore, policy-making should take account that fact and should minimise the economic and human cost of performance of small and medium sized enterprises.

Methodology/methods Firstly, the method of description was used to describe the present situation of small and medium sized enterprises in EU. Secondly, the analysis of the indicator „paying taxes“ was employed across EU Member States. As data source was mainly used annually published „Doing Business“ report for 2016, where above mentioned indicator is reported based on the coordination of the World Bank, International Finance Corporation and PwC. Then the comparative analysis and evaluation of Paying taxes indicator were used to discuss the differences between compliance costs of each EU Member States in the area of paying taxes.

Scientific aim The aim of the paper is to evaluate the compliance costs of taxation for medium sized enterprises in EU Member States based on the analysis of the indicator „paying taxes“.

Findings The best EU Member State for medium sized enterprises performing its activities in respect of paying taxes, can be considered Ireland and Luxembourg. In contrast, the worst one can be considered Italy and the Czech Republic.

Conclusions As regard to compliance costs of taxation, Italy and France are countries where medium sized enterprises bear the highest compliance costs of taxation. However, in respect of time needed for preparing, filing and paying of three major taxes, medium sized enterprises in EU Member States spend between 7 and 53 working days per year.

Keywords: Small and medium sized enterprises, EU Member States, compliance cost of taxation, paying taxes indicator, doing business

JEL Classification: F23, M16

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Introduction

The European Commission (2003) defines the SMEs as businesses which employ less than 250 employees and have an annual turnover of less than EUR 50 million, and / or their balance sheet total is less than EUR 43 million. Based on the mentioned key indicators (number of employees, turnover or balance sheet total), there are distinguished three categories of enterprises, namely micro, small, and medium-sized enterprises. Further, the European Commission (2015) states, that in 2014, 22.3 million SMEs were active in the non-financial business sector² across the EU28 and SMEs account for 99.8% of all enterprises in this sector. In respect of value added, the European Commission adds that SMEs generated more than EUR 3.7 trillion of value added (it means 58% of the sector's total value added), and employed almost 90 million people (it means 67% of the sector's total employment). In addition, regarding categories of SMEs, micro SMEs (93%) employing less than 10 people have the largest portion on the mentioned values. Contrary with large enterprises representing very small portion of enterprises (0.2%), they employ 33% staff and generate more than 42% of value added (for details see table 1 below).

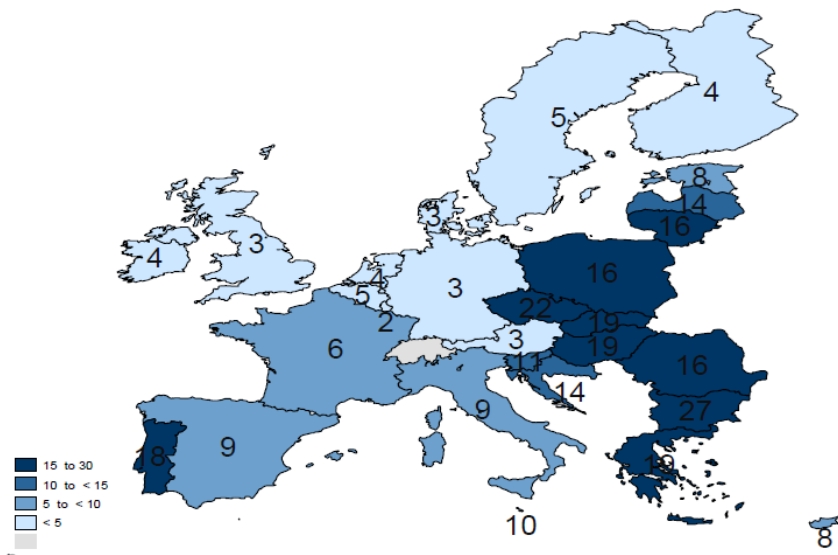
Table 1 SMEs and large enterprises: number of enterprises, employment, and value added in the EU28 in 2014

	Micro	Small	Medium sized	SMEs	Large	Total
Enterprises (Number)	20,710,324	1,373,365	224,811	22,308,500 ris es	43,766 Ens	22,352,260
%	92.7% Number)	6.1% mber)	1.0% Number)	99.8% Number)	0.2% Number)	100% Number)
Persons Employed (Number)	39,274,088	27,452,716	23,257,412	89,984,216	44,438,724	134,422,944
%	29.2%	20.4%	17.3%	66.9%	33.1%	100%
Value Added (EUR billion)	1,358	1,169 Persons	1,188 Persons	3,715	2,710 Persons	6,425
%	21.1% Employed	18.2% Employed	18.5% Employed	57.8% Employed	42.2% Employed	100%

Source: Annual report on SMEs 2014/2015, European Commission 2015.

While SMEs account almost the same share of the total number of enterprises active in the EU Member States, their economic contribution varies significantly. The European Commission (2015) state, that most of the Central European countries are characterised by a high number of SMEs per EUR million of value added generation in comparison to Western European countries (for details see Figure 1 below), particularly in Luxembourg 2 contrary to Bulgaria with 27 (Czech Republic has 22, the second highest value).

About sectors, where SMEs are operating, there can be distinguished five key sectors: 'wholesale and retail trade', 'manufacturing', 'construction', 'business services' and 'accommodation and food services'. In the EU28, the largest economic sector in the non-financial business sector is represented by the 'wholesale and retail trade and repair' sector which accounts for the largest share of SME employment (26%), number of SME firms, and SME value added (22%). The rest of four sector together with 'trade and repairs', account for 79% of total SME employment in the non-financial business sector, 78% of SME enterprises, and 71% of SME value added.

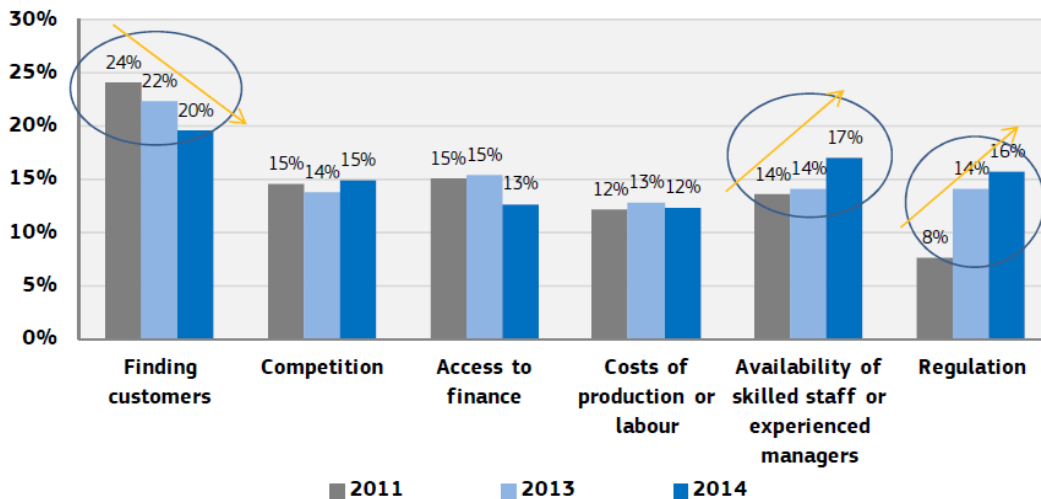


Source: Eurostat, National Statistical Offices and DIW Econ in European Commission, 2015.

Figure 1 Number of SMEs per EUR million of value added in the non-financial business sector across EU Member States in 2014

In 2014 EU28 SMEs value added grew by 3.3% and employment by 1.2%, which presents very positive experience contrary with 2013. It is evident that SMEs represents crucial role in European economy. However, the growth was not shared by all Member States - SMEs in Cyprus, Sweden, Croatia, Greece, Italy and the Czech Republic showed a decline in value added, which in the case of Cyprus and Italy was also accompanied by a reduction in employment.

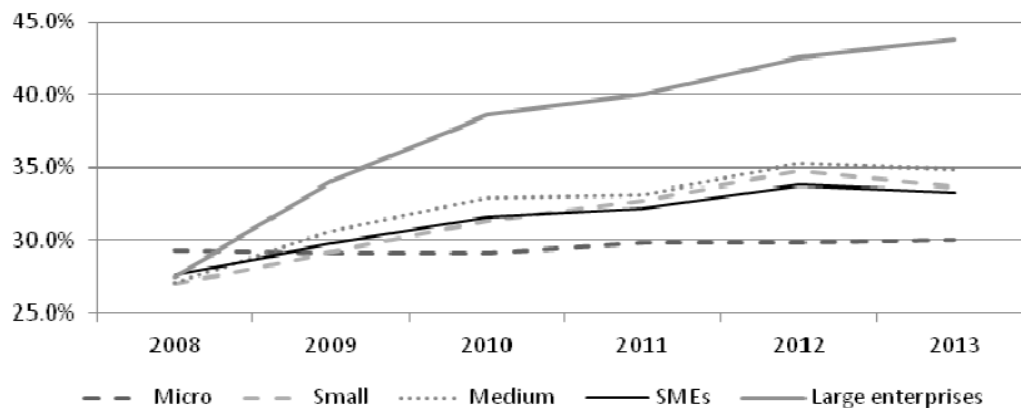
Further, the European Commission (2015) has revealed that SMEs are facing a lot of obstacles, the most pressing problem is an increased level of regulation and reduced availability of skilled staff or experienced managers (for detail see figure 2 below).



Source: Eurostat, National Statistical Offices and DIW Econ in European Commission, 2015.

Figure 2 Most pressing problems faced by SMEs – a comparison of the latest SAFE survey results

Moreover, in the respect of regulation, if SMEs are internationalized and operate in other EU Member States or other states, there are at least 27 different tax and accounting systems which generate excessive compliance costs. With this question is related fact of EU exports, although many viable SMEs do not export at all. As can be seen in figure 3 below, large enterprises benefited much more from the rapid growth in extra-EU exports while SMEs' exports showed their dependence on intra-EU markets.



Source: Eurostat – Comext in European Commission, 2015.

Figure 3 Shares of extra-EU exports in total export value by firm size class EU27 2008-2013

Therefore, policy-making should take account of that fact and should minimise the economic and human cost of performance of SMEs. It means that any size-class specific obstacles or tax-related disincentives or others resulted into growing a business performance costs should be eliminated or, at minimum, significantly reduced.

The aim of the paper is to evaluate the compliance costs of taxation for medium-sized enterprises in EU Member States based on the analysis of the indicator „paying taxes“ which is annually published by „Doing Business“ project coordinated by the World Bank, International Finance Corporation and PwC.

1 Data and Methodology

To reach the aim of the paper, firstly the analysis of the indicator „paying taxes“ was employed across EU Member States. Then the compliance costs of taxes and related aspects were evaluated and compared for each EU Member States.

As data source was mainly used platform of the World Bank and annually published „Doing Business“ report for 2016, where above mentioned indicator is reported based on the coordination of the World Bank, International Finance Corporation and PwC. Doing Business report measures the business environment in 189 countries by using the case of a standardised, mid-sized firm since 2003. Paying Taxes indicator measures *tax payments* (total number of taxes and contributions paid including consumption taxes and employee-borne labor taxes, method and frequency of filling and payment), *time* required to comply with three major taxes (covering collecting information, completing tax return, arranging payment, preparing tax accounting books in hours per year) and *total tax rate* (covering profit or corporate income tax, social contribution and labor taxes paid by the employer, property and property transfer taxes, dividend, capital gains and financial transactions taxes, waste collection, vehicle, road and other small taxes or fees) as a share of profit before all taxes for calendar year 2014. Three major taxes covered in time indicator include VAT (and other consumption taxes), Corporate Income Tax and labour taxes with social contributions, which are considered as the most time-consuming taxes for businesses across the world.

The paper uses standard methods of scientific work. Firstly, the method of description was used to describe the present situation of SMEs in EU. Then, the comparative analysis of Paying taxes indicator was used to discuss the differences between compliance costs of each EU Member States in the area of paying taxes. At the end the method of synthesis, deduction and induction was used.

2 Theoretical Backgrounds

The tax compliance costs are defined as the costs borne by business and individuals for complying with tax regulations, as states Sandford et al. (1989) who as the first researched those costs related with Value Added Tax (hereinafter VAT) and other taxes in the United Kingdom in the 1970s and 1980s. Chittenden et al. (2000) state that tax compliance costs are regressive to the size of enterprise, i.e. compliance costs are large and fall disproportionately on small business which bear a higher burden, particularly authors state that tax compliance costs are hundred times higher for SMEs than large enterprises. Moreover, Cressy (2000) and Nerudová et al. (2009) also emphasize that those costs tend to grow for businesses active across borders, i.e. in case of SMEs with foreign branch or subsidiary in comparison with SMEs which are not internationalized. Sandford (1995)

add that tax compliance costs can generate prohibitive effect with the result of declining international competitiveness.

Shaw et al. (2008) state that tax compliance costs tend to be lower where the tax is simple, where the tax regulations have one rate or a few rates and where tax regulations have a few tax reliefs or tax deductibility benefits. Moreover, when the tax system is considered as a whole, authors add that the application of common definitions and procedures across different taxes reduces tax compliance costs. KPMG (1996, 2006) emphasizes that often changes of tax system or taxes are a significant driver of tax compliance costs as they create both costs and uncertainty. Evans (2003a) and Green (1994) also confirmed that frequency of change is one of the most significant drivers of tax compliance costs, and add that the second one is complexity of tax system or tax regulation. Shaw et al. (2008) further add that other driver is an increased emphasis of tax authorities on voluntary compliance and self-determination of tax.

In respect of individual taxes, the VAT is considered for the tax with the high compliance costs due to higher obligations, comprehensive record keeping and regularly reporting as state Sandford et al. (1981). In case of business taxes, Cordova-Novion and De Young (2001) revealed that tax compliance are regressive and are increasing over time. Evans (2003b) proved that highly significant tax compliance costs are in case of personal income taxes, corporate income taxes and VAT and they reached amount between 2% and 10% of the revenue yield from those taxes, up to 2.5% of GDP and are usually multiple of administrative costs.

Generally, the tax compliance costs literature can be divided into two main groups, depending on the focus of the studies, particularly on studies measuring tax compliance costs of specific taxes (VAT, corporate income tax, personal income tax, services tax, fringe benefits tax, payroll taxes, excise duties and others), or of variety of taxes or of a whole tax system. Moreover, most studies focus on private businesses and do not distinguish between specific business sectors in their analyses.

3 Results and Discussion

Paying taxes indicator records the taxes and mandatory contributions that a medium size company must pay in a given year together with the administrative burden of taxation. Each country is ranked by sorting its distance to frontier score (hereinafter DTF score) for paying taxes which is determined as the simple average of the distance to frontier scores for each of the component indicators, particularly 33.3% of time indicator, 33.3% of total tax rate indicator and 33.3% of payments indicator. As can be seen in table 2 below, the best position from the EU Member States is achieved by Ireland (with 94.97 DTF and 6 rank from the 189 countries), the second one by Denmark (with 91.94 DTF and 12 rank), then by Norway (with 91.34 DTF and 14 rank) and by United Kingdom (with 91.34 DTF and 15 rank). In contrast, the worst position from the EU Member States is achieved by Italy (with 62.98 DTF and 137 rank) and by the Czech Republic (with 67.09 DTF and 122 rank). Further, if the DTF score for Europe and Central Asia is taken into account (i.e., 76.15 DTF) then worse score is also achieved by France, Bulgaria, Belgium and Hungary.

However, the same positions are not achieved for others indicators, there situations vary significantly (see table 2 below). As regards time indicator, which measures time in hours per year taken to prepare, file and pay three major taxes together with preparing of accounting books, the best position is realized by Luxembourg (with 55 hours per year), the second one by Estonia (with 81 hours per year), then by Ireland (with 82 hours per year), by Norway (with 83 hours per year) and by Finland (with 93 hours per year). In contrast, the worst position is realized by Bulgaria (with 423 hours per year) and by the Czech Republic (with 405 hours per year). It is almost twice more than is value for Europe and Central Asia (i.e. 232.7 hours per year). Further, if the payments indicator (measuring total number of taxes and contributions, the method of payment and frequency of filling and payment) is compared, then the lowest number of payments is realized in Norway (i.e. 4 per year), the second one in Sweden (i.e. 6 per year) and then in Malta, Latvia and Poland with 7 payments per year. In contrast, the highest number of payments is realized in Cyprus (i.e. 27 payments per year) and in Luxembourg (i.e. 23 payments per year).

The last part of Paying taxes indicator is total tax rate, which is summary of profit tax, labor tax and contribution and other taxes. The total tax rate as a share of commercial profit measures the amount of previous mentioned taxes born by the business in the second year of operation and provides comprehensive measure of the compliance cost of all taxes. The best position is achieved by Croatia (i.e. 20% of profit), the second one by Luxembourg (i.e. 20.1% of profit), then by Cyprus (i.e. 24.4% of profit), by Denmark (i.e. 24.5% of profit) and by Ireland (25.9% of profit). In contrast, the worst position is achieved by Italy (i.e. 64.8% of profit), then by France (i.e. 62.7% of profit) and by Belgium (i.e. 58.4% of profit). In comparison with the value for Europe and Central Asia (i.e. 34.8% of profit) Italy and France bear more than twice higher compliance costs of measured taxes (for more details see table 2 below).

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Table 2 Summary of „Paying taxes“ indicator for European Member States in 2014/2015

Country	Rank (1-189)	DTF score (0-100)	Payments (number per year)	Time (hours per year)	Total tax rate (% of profit)	Profit tax (% of profit)	Labor tax and contributions (% of profit)	Other taxes ² (% of profit)
Ireland	6	94.97	9.0 (5)	82.0 (3)	25.9 (5)	12.4	12.1	1.4
Denmark	12	91.94	10.0 (6)	130.0 (9)	24.5 (4)	18.7	3.0	2.8
Norway	14	91.36	4.0 (1)	83.0 (4)	39.5 (11)	23.6	15.9	0.0
United Kingdom	15	91.34	8.0 (4)	110.0 (6)	32.0 (8)	19.2	11.2	1.6
Finland	17	89.38	8.0 (4)	93.0 (5)	37.9 (10)	11.8	24.8	1.3
Luxembourg	21	88.58	23.0 (11)	55.0 (1)	20.1 (2)	4.2	15.5	0.4
Malta	25	85.91	7.0 (3)	139.0 (11)	41.3 (15)	30.1	10.7	0.5
Netherlands	26	85.81	9.0 (5)	123.0 (8)	41.0 (13)	20.4	20.2	0.4
Latvia	27	85.76	7.0 (3)	193.0 (19)	35.9 (9)	6.3	26.6	3.0
Estonia	30	84.33	8.0 (4)	81.0 (2)	49.4 (21)	8.4	39.0	2.0
Slovenia	35	83.74	10.0 (6)	245.0 (23)	31.0 (7)	12.7	18.2	0.1
Sweden	37	83.46	6.0 (2)	122.0 (7)	49.1 (20)	13.1	35.4	0.6
Croatia	38	83.02	19.0 (10)	206.0 (21)	20.0 (1)	0.0	18.8	1.2
Cyprus	44	81.70	27.0 (12)	145.5 (12)	24.4 (3)	9.3	13.4	1.7
Lithuania	49	81.42	11.0 (7)	171.0 (17)	42.6 (17)	5.9	35.2	1.5
Romania	55	80.69	14.0 (9)	159.0 (14)	42.0 (16)	10.9	30.0	1.1
Poland	58	79.63	7.0 (3)	271.0 (25)	40.3 (12)	14.5	24.8	1.0
Spain	60	79.48	9.0 (5)	158.0 (13)	50.0 (23)	13.3	35.9	0.8
Portugal	65	78.54	8.0 (4)	275.0 (26)	41.0 (14)	13.6	26.8	0.6
Greece	66	78.45	8.0 (4)	193.0 (20)	49.6 (22)	19.7	29.3	0.6
Germany	72	77.00	9.0 (5)	218.0 (22)	48.8 (19)	23.2	21.2	4.4
Slovak Republic	73	76.79	10.0 (6)	188.0 (18)	51.2 (25)	10.5	39.7	1.0
Austria	74	76.53	12.0 (8)	166.0 (16)	51.7 (26)	16.8	34.3	0.6
France	87	74.31	8.0 (4)	137.0 (10)	62.7 (28)	0.5	53.5	8.7
Bulgaria	88	74.19	14.0 (9)	423.0 (29)	27.0 (6)	5.0	20.2	1.8
Belgium	90	73.80	11.0 (7)	161.0 (15)	58.4 (27)	8.4	49.4	0.6
Hungary	95	73.06	11.0 (7)	277.0 (27)	48.4 (18)	11.8	34.3	2.3
Czech Republic	122	67.09	8.0 (4)	405.0 (28)	50.4 (24)	9.5	38.4	2.5
Italy	137	62.98	14.0 (9)	269.0 (24)	64.8 (29)	19.5	43.4	1.9
Europe & Central Asia	..	76.15	19.2	232.7	34.8	10.8	20.4	3.1
OECD high income	..	81.47	11.1	176.6	41.2	14.9	24.1	1.7

1) In bracket is mentioned rank achieved in individual category.

2) Other taxes cover property and property transfer taxes, dividend, capital gains and financial transactions taxes, waste collection, vehicle, road and other small taxes or fees.

Source: World Bank. 2016, own processing.

As can be seen in table 2 above, there are very significant differences in individual categories between EU Member States. In more than half of EU Member States, the medium size enterprises bear higher compliance costs of measured taxes than is born by the OECD high income countries (i.e. 41.2% of profit), particularly in Malta, Romania, Lithuania, Hungary, Germany, Sweden, Estonia, Greece, Spain, Czech Republic, Slovak Republic, Austria, Belgium, France and Italy. In respect of time needed for preparing, filling and paying of three major taxes, medium sized enterprises spend 53 working days per year in Bulgaria, 51 days in the Czech Republic contrary with 7 days in Luxembourg.

Overall, it is possible to say, that the best EU Member State where medium sized enterprises can perform its activities in respect of paying taxes, can be considered Ireland and Luxembourg, then Norway, United Kingdom, Denmark and Finland. In contrast, Italy and the Czech Republic can be considered for the worst one, particularly Italy due to the highest compliance costs of all measured taxes in the amount of 64.8% of profit and the Czech Republic due to the second highest value of time needed for preparing, filing and paying of three major taxes. Results of individual categories of Paying taxes indicator correspond with the overall received ranking. The Czech Republic as 122 and Italy as 137 from 189 analyzed countries.

Conclusion

The aim of paper was to evaluate the compliance costs of taxation for medium-sized enterprises in EU Member States based on the analysis of the indicator „paying taxes“ which is annually published by „Doing Business“ project coordinated by the World Bank, International Finance Corporation and PwC.

Based on the results we can concluded that the best EU Member State for medium sized enterprises performing its activities in respect of paying taxes, can be considered Ireland and Luxembourg, then Norway, United Kingdom, Denmark and Finland. In contrast, the worst one can be considered Italy and the Czech Republic. Further, as regard to compliance costs of taxation, Italy and France are countries where medium sized enterprises bear the highest compliance costs of taxation (i.e. 64.8% of profit and 62.7% of profit respectively). However, in respect of time needed for preparing, filing and paying of three major taxes, medium sized enterprises in EU Member States spend between 7 working days per year in Luxembourg and 53 working days in Bulgaria.

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Notes

² The non-financial business sector consists of all sectors of the economies of the EU28 or Member States, except for financial services, government services, education, health, arts and culture, agriculture, forestry, and fishing. It means the following sub-sectors: ‘mining and quarrying’, ‘manufacturing’, ‘electricity, gas, steam and air condition supply’, ‘water supply, sewerage, waste management and remediation activities’, ‘construction’, ‘wholesale and retail trade, repair of motor vehicles and motorcycles’, ‘transportation and storage’, ‘accommodation and food services’, ‘information and communication’, ‘real estate activities’, ‘professional, scientific and technical activities’ and ‘administrative and support services’.

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**SECTION 11
EFFICIENCY OF INFORMATION SYSTEMS IN CORPORATE
PRACTICE**

SUPPORT OF PROCESSES OUTSIDE OF INFORMATION SYSTEM

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Abstract

Purpose of the article is to analyse of possibilities for support of the independent processes outside of the information system (IS) in the enterprise environment. The chosen process is innovation; the life cycle of innovation is explained. The useful tool for the support of independent processes is software (SW) ATOM, an ontology driven web based application. The ontology preparation of the application and example of result solution is presented, some figures illustrate the procedure.

Methodology/methods used in research are connected with innovation, its steps life cycle: suggestion of innovation, demand for solution of innovation, the final solution of innovation, and project for implementation of innovation. The next used methodology is oriented to an ontology preparation for the SW application: scheme of classes and associations between classes, table of assignment characteristics to classes, and implementation of ontology in SW ATOM. The extensive literature review of the current state of the topic is added.

Scientific aim is to verify at the experiment a real possibility to support independent processes outside of IS using an ontology driven application. The contribution is a fact that the result of the research work could be used for any process outside of IS. Changes in IS are very expensive, complicated and risk, but it should be by suggested solution omitted.

Findings are presented in a solution for information support of the processes outside the IS via an ontology driven application. The same procedure should be used for any process outside of IS and could be omitted problematic and expensive changes in IS.

Conclusions Limits of the proposed solution consist in only laboratory experimental verification. For the practical use should be necessary first prepared a prototype for the corporation IS and enterprise environment.

Keywords: information system, independent process, innovation, ontology driven application, ATOM

JEL Classification: D80, L86, M15, O32

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Introduction

The paper is focused on the information support of processes outside of information system (IS) in corporate praxis. It is well known that it is time-consuming and costly to set up an IS's missing features, in addition to implementing them on the level of a particular customer. One of the ways to avoid having to do so is the implementation of an application that supports processes outside of an IS, but that works with the corporate IS.

What is the cause of missing features in the IS? One of them could be the consistent application of the "lean" principle that is oriented on eliminating waste, adding value, orientating towards the customer, reducing cost, improving quality, improving continuously, and reducing delivery times. The ultimate goal is to provide perfect value to the customer through a perfect value creation process that has zero waste. To accomplish this, lean thinking changes the focus of management from optimizing separate technologies, assets, and vertical departments to optimizing the flow of products and services through entire value streams that flow horizontally across technologies, assets, and departments to customers.

Eliminating waste along entire value streams, instead of at isolated points, creates processes that need less human effort, less space, less capital, and less time to make products and services with far fewer costs and defects, compared with traditional business systems. Companies are able to respond to changing customer desires with high variety, high quality, low cost, and very fast throughput times. Furthermore, information management becomes much simpler and more accurate (Dudbridge, 2011).

It is presented a solution to support business innovation process outside of IS based on ontology driven software (SW) ATOM. The steps of innovation life cycle are mentioned and ontology preparation and knowledge base is explained. The same procedure can be applied for any process outside of IS.

1 The extensive literature review of the current state of the topic

The paper deals with support of processes outside of the IS, using a knowledge management system (KMS) in the area of innovation in production company. The topic is quite original as a scientific problem, but there is some papers (Petr, 2013) and companies (Software602, 2016) that offer a technical solution.

Information system is a topic from various point of view in Thousands scientific papers. „The concept of enterprise systems designed to support the functionality of enterprise has a significant step toward in the long history of technology assisted business process integration. The radical transformation of economic environment forced to elaborate new business models and tightly aligned information technology. At presents we are witnesses to and active participants of a new paradigm shift. On the business side the agility and flexibility are the key features. On the information technology side are two emerging approaches: service oriented architecture and business process management“ (Lorinz, 2007).

The efficiency of IS regarding support of business processes is presented in theoretical model (Gebauer and Schober, 2006): „The theoretical model is presented and its details the economics of two generic strategies of IS flexibility (i.e., flexibility-to-use regarding the IS features that are provided at the time of implementation, and flexibility-to-change regarding the IS features that constitute an option for later system upgrade), and that also includes the possibility of process performance outside of the IS (manual operations). Based on an analysis of the model, is concluded that IS flexibility-to-change is cost efficiently deployed to support a business process characterized by a high level of structural and environmental uncertainty, whereas a low level of process uncertainty corresponds efficiently with IS flexibility-to-use. The model also indicates that high process variability can improve the importance of IS flexibility management in general, as it tends to limit the value of an IS over manual operations, whereas a high level of time-criticality of process requirements tends to increase the value of an IS over manual operations“.

The IS integration and support of processes in the enterprise should be accomplished in portal solution (Lungu et al. 2009): „Portal SW continues to offer one of the few infrastructure frameworks that truly embrace open and flexible computing. A portal is a point of integration, useful to the organization by integrating internal business processes and by offering information to the outside world. We can use portals in decision making in two ways. One way is, by enabling managers to access the data they require by using the portal's interface. Another way, which doesn't exclude the first is, by developing a distinct decision support application within the portal which uses scenarios using the data from the integrated systems to help managers make more well-founded actions.“

The knowledge approach and KMS are mentioned in many sources. The result of analysis knowledge management in Czech companies (Marešová, 2004) stated that: “The Czech companies are interested in knowledge management, but they come across many obstacles, which finally discourage them from its consistent implementation. Within the horizon of three years, companies plan to deal with knowledge management much

more intensively and even to remove potential barriers of its introduction. On the whole, it can be stated that companies consider knowledge management a significant tool for increasing their competitive ability”.

Paper (Yang and Pai, 2004) suggested an improvement of the ineffective administration processes using the user friendly IS. “Each organization should create the technology and knowledge of administration in order to gain the competitive advantage”. The process-oriented knowledge management in product lifecycle is mentioned in the paper (Felic, Koenig-Ries, and Klein, 2014): “To deal with comprehensible knowledge throughout the product lifecycle phases and thereby eliminate communication overhead, using a process-oriented and integrated semantic solution that supports interoperability of knowledge during all phases of the product lifecycle. Based on shared ontologies and product models, collaborators of product chains have the ability to define their own extensions to the underlying models and ontologies”.

The knowledge management approach in loosely coupled systems is analyzed in paper (Agrez and Damij, 2016): “The solution is appropriate for implementation to analyze knowledge network and process architecture relations in different informal organizational networks, as well as during events where spontaneous cooperation among different types of organizations and individuals is necessary, such as massive natural disasters and other similarly events”.

The topic of innovation in enterprise is analyzed from the competitiveness point of view (Atzei et al., 1999), where is reason for innovation found in aspects: “The adaptations of industrial and public organizations to the global market needs; the understanding of the bottleneck factors limiting competitiveness; the trends toward new system architectures and new engineering and production methods; the understanding of the role of new technology in the future applications”.

The innovation mechanism as a business management tool is described in the paper (Guanzhong, 2011): “Entrepreneurial activity is a spiraling cycle process, its essence lies in the integration of resource production and deployment through management innovation. That realizing the proliferation of business value continuously in whole running process of enterprise, becomes the second core competencies. Aims at adjusting the national industrial structure and changing the mode of economic growth, it is advocated to classify the enterprises according to 3 factors as manufacturing strategy level, value growth mode and developing stage of enterprises, summarized the commonality of design innovation in different types of enterprises; it is also a new ruler for measuring the enterprises' state of economic development and strategic transformation. The way enterprises engaged in creative design activities is closely related to the type of businesses, the mechanisms of innovative design will be restricted and affected by the environmental conditions within and outside the enterprise”.

The KMS for innovation is presented in the paper (Waris, Sanin and Szczerbicki, 2016): “Knowledge and experience are essential requirements for product innovation. It is proposed a systematic approach for product innovation support using a KMS comprising a Set of Experience Knowledge Structure and Decisional DNA. This proposed system is dynamic in nature because it updates itself every time a new decision related to innovation is made. Through this system, the product innovation process can be performed semiautomatically and efficiently because it stores knowledge of past experiences of innovative decisions”.

2 Support of processes outside the IS

In business practice, it is apparent that some processes need to be supported by the IS more urgently, but they also need to maintain the independence of the systems. Without this, the organization fails to be sufficiently flexible and its processes cannot be sufficiently distinguished from those of competitors working with the same system. A suitable solution is an application capable of exchanging data with IS. This is actually a fairly common situation. A larger organization with many ISs (such as a bank) sees a new opportunity in the market and wants to introduce a new product. Working out exactly what the product has to contain and to whom it should be offered may not take more than a few days, but then ICT becomes involved. It is necessary to carry out interventions in the customer system, in the central transaction system, in the internal product catalogue, in which are working partners, and in several other systems. It is therefore necessary to convene architects, process consultants, security specialists, administrators of the systems, and infrastructure specialists.

They assess the risk (“we do not want to risk that, because the changes will mean limited support for the existing products”) and a project starts to take shape that takes more than half a year and will require a budget stretching to millions. Do we really want to introduce the new product? Can the project be defended to the board? Now try and imagine that it would be possible to produce the same products, taking a few days, without interfering with the individual systems. There is no need for discussions with architects and security experts. It is not even necessary to process consultants. For a start, they produce a preliminary definition of the process, and only if it is shown that the product is really interesting would it be appropriate to devote efforts to fine-tuning the processes and ICT support.

Medium-sized companies solve different problems from banks and they operate different infrastructures, but their situation is in some respects similar. If they want to process the customers' needs, they may run into a similar problem even within a single information system. This is especially the case of the expensive and complex enterprise resource planning systems. The processes in the system are set up according to best practices, and if an organization wants to act differently from most, it will need special treatment, involving very long and thorough testing.

Otherwise, it will run the risk that somewhere in another part of the system a change will occur in unpredictable settings. Thus, again, the process of the IS implies the end of flexibility. However, apart from the tailored SW, there is other (cheaper and easier) solution, even for standard IS – the utilization of an application. There is a solution that facilitates the management of processes outside the IS. The requirements that have to be fulfilled by the applications are: “Cooperation with IS (loading data from them and passing the results back); the workflow process that delivers the right information at the right time to the right person; aq user-friendly interface; and creating and archiving documents” (Petr, 2013).

3 Innovation in the enterprise

Innovation is obviously one of the key business processes that drive success. The principle that innovation must be a core element of every organization's strategy is a primary management rule. To create a realistic possibility of breakthroughs and new business model innovations, and to improve the quality of everyone's ideas of all types, incremental, breakthrough, and business model, it is necessary to structure the process in a much more purposeful way. Just in case you are thinking that success is a question of how much money you spend, please think again. Recent studies show that success in innovation is not a function of how much is spent on research and development, but rather on the quality of the process. Innovation development is design and engineering to transform great concepts into finished products, services, and business designs. This should be an integrated, multi-disciplinary process that includes the researchers, who still probably understand the ideas best, because they have already carried out so much work on them, as well as people with deep knowledge of the relevant business domains, which may include manufacturing, distribution, branding, marketing, and sales. Project management skills are very important here. It is often at the project management stage that the existence of the innovation is disclosed to customers in the ongoing effort to engage them as innovation partners and to maintain their loyalty in the face of competing offers (Morris, 2011).

Innovation is based on a simple idea that brings something new and different, emotionally. Lasting success has been recorded only by those businesses that have created their own system of governance and with it, after hard and difficult work, achieved success. There must not be a lot of talk about strategic objectives, customer value indicators, metrics, resource allocation, priorities, and development plans. More natural human contact, more entrepreneurship, enthusiasm for the cause, freedom, and self-realization are important elements of innovation. Growth based on innovation rises on existing values and new markets. Areas include innovative products and services, as well as key processes and business systems (Košturiak and Chal', 2013).

Scott (2013) warns against boundless innovation development. It is necessary to provide initial innovation requirements for the development of a market, the definition of a financial framework, and a substantive limitations solution and its outcome. Although such restrictions may limit the number of innovative options, any reasonable restriction promotes creative thinking and prevents time wasting on something that could well be rejected by the management.

3.1 Life cycle of innovation

With respect to the result on literature review and its analysis, is an innovation process for the research experiment divided into 4 phases:

1. Suggestion of innovation (SI).
2. Demand for innovation (DI).
3. Result of innovation (RI).
4. Project of implementation (PI).



Source: author

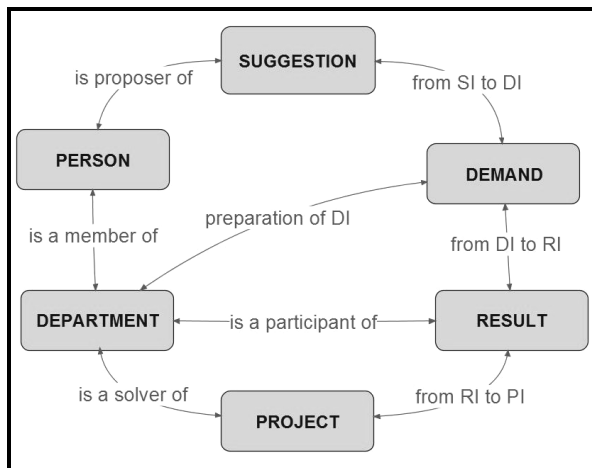
Figure 1 Cooperation between SW ATOM and information system

Phase **suggestion of innovation (SI)** is opened for all employees of a company, insertion of the SI is simple, the related form is generated from the ontology automatic. In the **demand for innovation (DI)** phase is innovation an object of evaluation of company managers and department that is goal of DI. The DI is completed with limitations of the innovation and with other requirements of the solution. If a DI is accepted than can be solved and successful result will be added to the phase **result of innovation (RI)** and than is converted into **project of implementation (PI)** phase and data is translated into IS. Innovation process is supported by application in SW ATOM (2016) and result of solution of innovation is translated into IS, where is processed, see Figure 1.

4 Ontology definition and preparation base of innovations

Ontology is a heart of the application in SW ATOM; it defines structure of the knowledge in the area of interest; includes classes, associations between classes, characteristics of classes; and occurrences of classes and associations. The methodology steps of ontology development are:

1. Schema of classes and associations, prepared using VUE (2016), see Figure 2.
2. Table of assignment characteristics to classes, see Table 1.
3. Ontology implementation in SW ATOM, see Figure 3.



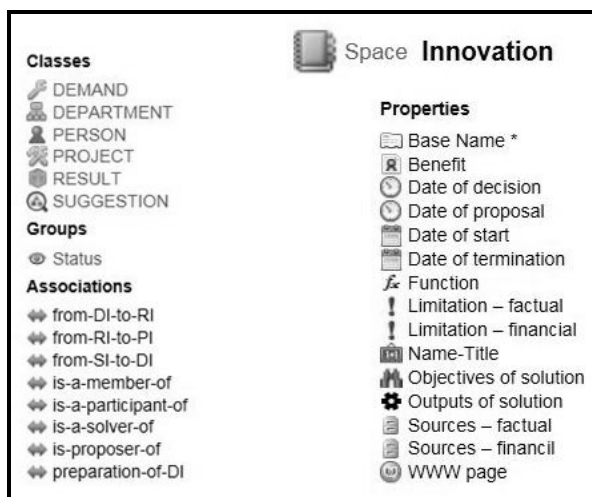
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Figure 2 Schema of ontology classes and associations

Table 1 Table of assignment characteristics to classes

ORD	CHARACTERISTIC/CLASS	DATA TYPE	DEP	PER	SI	DI	RI	PI
1	Benefit	Number			X	X	X	X
2	Date of decision	Date			X	X	X	
3	Date of proposal	Date			X	X	X	
4	Date of start	Date			X	X	X	X
5	Date of termination	Date			X	X	X	X
6	Function	Text	X	X	X	X	X	X
7	Limitation – factual	Text				X	X	X
8	Limitation – financial	Number				X	X	X
9	Name or Title	Name	X	X	X	X	X	X
10	Objectives of solution	Text				X	X	X
11	Outputs of solution	Text				X	X	X
12	Sources – factual	Text				X	X	X
13	Sources – financial	Number				X	X	X
14	Status	Group-tree				X	X	X
15	WWW page	URL	X	X				

Source: author



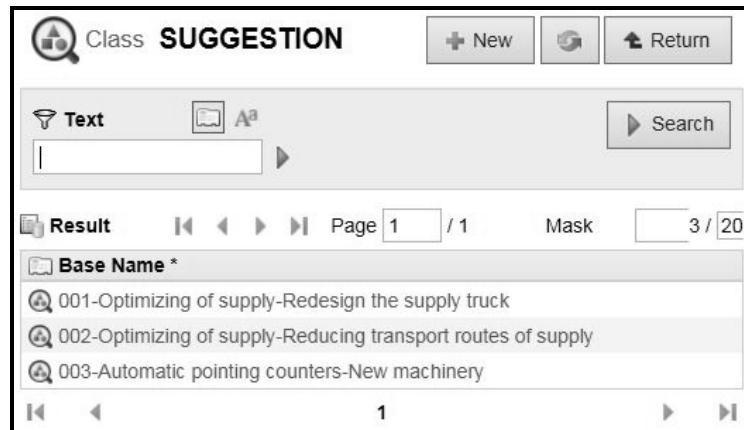
Source: author

Figure 3 Ontology definition in ATOM SW

Ontology classes include (see Figure 3): PERSON (PER) – that suggested or solved innovation, DEPARTMENT (DEP) - department of person and guarantor of solution of innovation; SUGGESTION - the primary suggestion of innovation, as an activity of employees.

The suggestion is evaluated by senior management of a company and if fits to the goals of company is released for solution of innovation as a DEMAND. The class RESULT is a result of solution of innovation and is converted to PROJECT for implementation.

The knowledge base of innovations is prepared using automatic generated forms from ontology by including occurrences of classes and setting up associations between them, see Figure 5.



Source: author

Figure 4 List of suggestions for innovation

Source: author

Figure 5 Form for including suggestion of innovation

The innovation is written into the standard form; see Figure 5. In the form, the innovation is connected to the proposal person or department of challengers and the department towards which the innovation is oriented is selected. A list of saved suggestions of innovations is shown in Figure 4. The experiment shows that the application works quite reliably, is easily manageable by users, and fulfils the necessary requirements.

5 Discussion and proposal for further development

The paper presents the results of the initial phase of the project, in which a possible problem of information support for a lean enterprise was specified. Based on the experience of the research knowledge systems, a solution to the specified problem has been proposed. However, the potential implementation of ATOM in enterprise practice for support of processes outside IS will require time.

First, it is necessary to conduct the analytical and experimental phase of the project, which will select a process that is not supported by an IS, and to verify experimentally in an enterprise environment whether ATOM, as its characteristics show, is able to run successfully in the form of an application with chosen process.

If the answer is yes, then it is necessary to verify it in a real case in enterprise practice as a prototype in the synthetic phase of a project. Only then can be the results of experiment generalized and methodically closed. The advantage of the ontologically driven system ATOM is that an arbitrary missing function of an IS can be supported.

Conclusion

The article presents results of research in support of processes outside of an corporate IS. The reason of the missing functions in an IS could be, for example, the consistent application of the "lean" principle that is oriented on eliminating waste and reducing cost. The missing function of an IS is in the research an innovation process. The life cycle of innovation in an enterprise is explained.

The application that supports innovation process outside of IS is prepared using SW ATOM. Methodology of the implementation of application is presented; its core task is an ontology preparation. Base of data is included using form that is automatic generated from ontology.

The experiment with support of process of innovation outside of IS sufficiently confirms the conformity of the procedure. But this is only a laboratory environment. For the corporate environment should be necessary next research fase: development of a prototype that verifies the laboratory result.

The article recommends one of the possible candidates for an application SW ATOM, and presents an example of its implementation as a knowledge system in innovation process support. To put it into practice, it is necessary to take a number of steps, which pose a challenge to our future research activities.

Acknowledgment

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**SECTION 12
QUANTITATIVE METHODS AND THEIR USE IN ECONOMIC
MODELS**

*COMPARISON OF EFFICIENCY ASSESSMENTS OBTAINED BY DATA
ENVELOPMENT ANALYSIS AND STOCHASTIC FRONTIER ANALYSIS*

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Abstract

Purpose of the article The purpose of the article is to assess efficiency of pension fund management Baltic countries by using data envelopment analysis and stochastic frontier analysis based models under various return on equity scenarios and compare results.

Methodology/methods Methods used are data envelopment analysis (DEA) including its constant returns to scale (CRS) and variable returns to scale models (VRS), stochastic frontier analysis (SFA) as well as regression analysis. The research covers pension fund management companies in Latvia, Lithuania and Estonia in post financial crisis years from 2009 to 2014. Efficiency is studied from the operational perspective in accordance with the financial models and underlying assumptions.

Scientific aim The aim is to apply the stochastic frontier analysis and data envelopment analysis as efficiency assessment methodology in the pension funds industry in the Baltics and compare efficiency results obtained by various models.

Findings All regression equations demonstrated strong correlation and significance, what means that in general results obtained by various efficiency assessment models are consistent. Pearson correlation coefficient for regression equations comprising SFA and DEA CRS was higher than for equations with SFA and DEA VRS. There are rather constant returns to scale than variable returns to scale. High correlation between DEA CRS and VRS regression equations also provides evidence that returns to scale are actually close to be constant.

Conclusions In case of DEA CRS model any deviation from the top performers is considered to be inefficiency disregarding the fact whether it is caused by a smaller size of operations or inefficient processes. DEA VRS model is comprehensive from a production economic point of view. However, it is quite tricky from a managerial point of view because it assumes not only increasing returns to scale, but also decreasing returns within the same model. SFA model results proved to be closer to DEA CRS than VRS.

Keywords: efficiency, data envelopment analysis, stochastic frontier analysis

JEL Classification: C10, G23

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Introduction

Performance management problem triggered a fair amount of scientific discussion. Typically, accounting, market, economic value added or balances scorecard based measurements are used for performance assessment purposes. Accounting performance measurements can be also used when non-listed firms are included. However, its main drawback is backward looking as well as risk that it can be subject to managerial manipulation. Bank efficiency studies are considered to be fairly abundant by now (Deutsche Bundesbank 2006). But only a few apply two or more techniques to an identical data set, especially European data (Weill 2004). Studies that compare parametric and non-parametric techniques are Ferrier and Lovell (1990), Sheldon (1994), Resti (1997), Bauer et al. (1998), Casu and Girardone (2002) and Beccalli et al. (2006). An early study that compares alternative frontier techniques is Ferrier and Lovell (1990). Researchers analysed the cost structure of 575 US banks for the year 1984 using both the Stochastic Frontier Analysis (SFA) and Data Envelopment Analysis (DEA) methodologies. They find higher efficiency scores with DEA compared to SFA, namely 80% and 74%, respectively. They conclude that DEA is sufficiently flexible to envelop the data more closely than the translog cost frontier. However, efficiency scores are not significantly correlated thus indicating that other factors not controlled for may drive the obtained wedge between the two measures. European evidence is provided by Sheldon (1994). He analysed the cost efficiency of Swiss banks with SFA and DEA in the period from 1987 to 1991. While results from DEA indicate that the average degree of cost efficiency is about 56%, SFA yielded only 3.9% mean efficiency. This substantial deviation from usually obtained magnitudes of around 80% obtained for US and European studies casts some doubt as to an appropriate specification of the cost function (Amel et al. 2004). Likewise, he reports insignificant rank-order correlation of 1%, indicating that no relationship exists between the two groups of efficiency scores. These results that two alternative methods to implement an identical theoretical cost minimization problem should not be correlated are remarkable. And, in fact, Resti (1997) provides very different results. He analysed the cost efficiency of 270 Italian banks over the period 1988-1992. He compares the parametric and non-parametric efficiency scores and finds that econometric and linear programming results do not differ substantially. Moreover, contrary to Ferrier and Lovell (1990) and Sheldon (1994), he reports higher efficiency scores between 81% and 92% for SFA as opposed to DEA scores between 60% and 78%. Rank correlation between SFA and DEA is statistically significant at the 1% level and ranges from 44% to 58%. The rank ordering of firm specific inefficiency is strongly correlated over time, although it is more persistent with DEA than with SFA. The Bauer et al. (1998) study is among all the most significant, given the application of four approaches SFA, DEA, Thick Frontier Analysis (TFA) and Distribution Free Analysis (DFA) on a data set of 683 US banks over the period 1977-1988. Mean efficiency of parametric techniques averages 83% while mean efficiency for the nonparametric approaches is only around 30%. Nonparametric and parametric techniques give only very weak consistency ranking with each other: rank-order correlation is 10%. All the methods are stable over time although DEA generally shows slightly better stability than the parametric methods. In sum, Bauer et al. (1998) conclude that there is no single correct approach to specify an efficient frontier. Instead, both measures seem to react to varying degrees to particularities of the data. In their study, Casu and Girardone (2002) evaluated the cost characteristics, profit efficiency and productivity change of Italian financial conglomerates during the 1990s using SFA, DFA and DEA. Efficiency measures from stochastic and deterministic frontiers are reasonably similar in magnitude and also show similar variation in efficiency levels. Weill (2004) also checks the robustness of SFA, DFA and DEA. He measures the cost efficiency of 688 banks from five European countries (France, Italy, Germany, Spain, and Switzerland) over the period from 1992 to 1998. He compares mean efficiencies, correlation coefficients between methodologies and the correlation with standard measures of performance. Efficiency scores do not differ substantially across techniques and are positively correlated between SFA and DFA. At the same time, there is no positive relationship between any parametric approach and DEA. All approaches provide efficiency scores that are correlated with standard measures of performance. Beccalli et al. (2006) measure cost efficiency of stock-market listed European banks in 1999 and 2000. SFA efficiency scores are slightly higher than DEA scores, namely 85% versus 83% and DEA efficiency scores are more dispersed compared to SFA.

More recent studies find that SFA efficiency scores are generally higher compared to DEA scores. This may reflect the different treatment of stochastic noise and the ability to control for heterogeneity. At the same time, studies that investigate the differences across methods more systematically show that efficiency measures differ not only in terms of mean industry efficiency.

1 Theoretical Framework

1.1 Foundations of the Data Envelopment Analysis

The mathematical programming approach to construction of frontiers and measurement of efficiency relative to constructed frontiers goes by the descriptive title of data envelopment analysis, with an acronym DEA (Fried et al., 2008). Data Envelopment Analysis was first coined by Charnes, Cooper and Rhodes (1978) which had an input-oriented model with constant return to scale (CRS). This method which is currently known as basic DEA was an extension of “Farrell's measure to multiple - input multiple - output situations and operationalised it using mathematical programming” (Emrouznejad, 2000). Recent scientific publications worldwide confirm that DEA is applied widely in different branches of scientific research (Liu et al. 2008), DEA has been applied for simultaneous analysis of production and investment performance of Canadian life and health insurance companies (Wu et al., 2007), for analysis of efficiency and productivity in the Swiss insurance industry (Biener et al., 2016), on bank branch efficiency (Paradi et al., 2011), on efficiency evaluation of equity funds (Babalos et al., 2012), widely used for rankings (Adler et al., 2002), for research evaluation (Meng et al. 2008), on requirements and challenges for application of DEA (Harami-Marnini et al., 2011).

So as to illustrate basic DEA model mathematically, let's assume that each decision-making units (DMUs) use m inputs for the production of n outputs in a given technology level. denotes the amount of input i ($i=1,2,\dots,m$) produced by j^{th} DMU ($j=1,2,\dots,k$), whereas represents the quantity of output s ($s=1,2,\dots,n$) produced by j^{th} DMU ($j=1,2,\dots,k$). The variables ($r=1, 2,\dots,n$) and ($i=1,2,\dots,m$) are weights of each output and input respectively. The technical efficiency of can be written as:

$$\text{Max} \frac{\sum_{r=1}^n u_r Y_{r0}}{\sum_{i=1}^m w_i X_{i0}} \quad (1)$$

subject to:

$$\frac{\sum_{r=1}^n u_r Y_{rj}}{\sum_{i=1}^m w_i X_{ij}} \leq 1 \quad (2)$$

for $j=1,2,\dots,k$ whereas u_r and $w_i \geq 0$ ($r=1,2,\dots,n$) and ($i=1,2,\dots,m$). This mathematical representation can be clarified as finding the appropriate values for u and w that maximise efficiency level of the observed firm subject to all efficiency scores are less than or equal to 1. To avoid infinite solutions (Coelli et al. 2005) and obtain a linear programming model, Charnes-Cooper transformation can be used as following:

$$\text{Max} \sum_{r=1}^n \mu_r Y_{r0} \quad (3)$$

subject to:

$$\sum_{i=1}^m w_i X_{i0} = 1 \quad (4)$$

and

$$\left(\sum_{r=1}^n \mu_r Y_{rj} - \sum_{i=1}^m w_{ir} X_{ij} \right) \leq 0 \quad (5)$$

whereas μ and $w_i \geq 0$ ($r=1,2,\dots,n$) and ($i=1,2,\dots,m$). As a result of these linear programming iterations, efficiency level of the observed DMU – DMU₀ in this case- is equal to 100% if and only if:

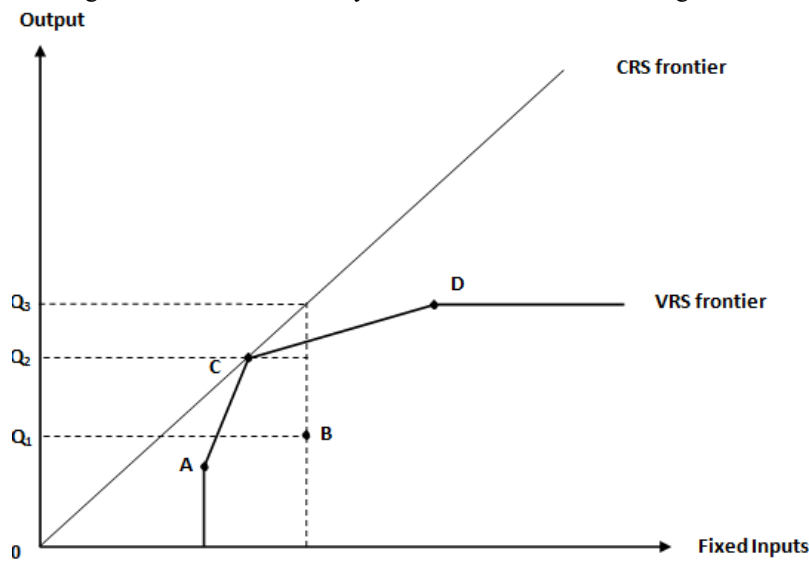
- i. = 1
- ii. = 0 for all ($i=1,2,\dots,m$) and ($r=1,2,\dots,n$).

1.2 DEA CRS and VRS Models

The analysis up to this point was assuming that DMUs are operating at constant return to scale (CRS) as put forward by Charnes, Cooper and Rhodes (1978) where t times increase in inputs will result in t times increase in output:

$$tY = tf(X) \tag{6}$$

On the other hand, in many sectors due to “imperfect competition, government regulations and constraints on finance” firms can’t be run at optimal scale (Coelli et al. 2005). Therefore, scale efficiency which has an impact on technical efficiency of a firm arises in these circumstances. So as to capture the magnitude of “scale effect”, Färe, Grosskopf and Logan (1983) and Banker, Charnes and Cooper (1984) developed a variable returns to scale (VRS) in which CRS assumption is relaxed. Figure 1 illustrates the divergence of VRS models from CRS ones in a quite generic way. For instance, the efficiency of point B is calculated as the ratio of O_1/O_2 regarding VRS frontier, whereas is equal to O_1/O_3 if CRS frontier is taken as the reference point. Eventually, it is apparent that VRS frontier takes the magnitude of scale efficiency into account while measuring the total efficiency.



Source: Coelli et a., 1997

Figure 1 DEA CRS and VRS models

Linear programming model of VRS is quite similar to the CRS as indicated in previously discussed formulas. Only difference is addition of a convexity constraint to the system:

$$\sum_{j=1}^k \lambda_j = 1, \text{ for } j = 1, 2, \dots, k \tag{7}$$

for $j = 1, \text{ for } j = 1, 2, \dots, k$.

The mathematical relationship between VRS and CRS efficiency measurements can be illustrated as (Coelli et al. 2005):

$$TE_{CRS} = TE_{VRS} * SE \tag{8}$$

where SE denotes scale efficiency, which means that CRS technical efficiency of a firm can be decoupled into pure technical efficiency and scale efficiency (SE). Even though, an analytical association exists among CRS and VRS models, input and output efficiency scores are different in VRS unlike in CRS models (Emrouznejad, 2000).

1.3 Foundations of the Stochastic Frontier Analysis

The initial framework on parametric frontier analysis commenced with Farrell’s (1957) cross-sectional model where goal programming techniques were used to estimate production function. Parametric frontier is specified as:

$$Y_i = f(x_i, \beta) TE_i \quad (9)$$

where $i=(1,2,3,\dots,I)$ represents the corresponding produces, Y is the level of output, X refers to a vector of N inputs, is the production frontier depending on inputs and technology parameters to be estimated. Aigner et al. (1977), Battese and Corra (1977), Meeusen and Van den Broek (1977) independently proposed to estimate a stochastic production frontier. The model is denoted in logs as

$$\ln y_i = \ln x_j \beta + v_i - u_i \quad (10)$$

where x_j denotes an input vector for firm j , v_j depicts random error added to the non-negative inefficiency term, u_j . Random error, v_j , accounts for measurement error and other random factors affecting the value of the output variable, together with the combined effects of unspecified input variables in the production function. The model is stochastic because the upper limit is determined by the stochastic variable:

$$\exp(x_j \beta + v_j) \quad (11)$$

The random error, v_j , can be positive or negative and so the stochastic frontier outputs vary relative to the deterministic part of the frontier model, $\exp(x_j)$ (Coelli et al., 1997). To estimate the stochastic frontier model, we need to assume a functional form. Since banking is a multi-output industry, specification of a production function is not feasible. Moreover, behavioral assumptions such as cost minimization are appropriate for banks and thus we follow the consensus in the literature and use duality to specify a cost frontier. The stochastic cost frontier has the following general log form:

$$\ln C_i = f(\ln y_{r,j}, \ln c_{i,j}) + \varepsilon_j \quad (12)$$

Here, C_i is total cost for firm j , $y_{r,j}$ measures the r^{th} output of firm j , and $c_{i,j}$ is the price of the i^{th} input of firm j . The error term, ε_j is composed of the two components v_j and u_j as $v_j + u_j$.

2 Analysis and Result Discussion

Baltic countries in the given research are defined as Estonia, Latvia and Lithuania. Twenty pension fund management companies are included in the research and are listed in the Table 1.

Table 1 Research companies

Name	Legal owner	Owner origin	Country of research
CBL Asset Management	Citadele Bank	Latvia	Latvia
Swedbank Investment Management	Swedbank Robur	Sweden	Latvia
SEB Wealth Management	SEB Bank	Sweden	Latvia
DNB Asset Management	DNB Bank	Norway	Latvia
Nordea Pensions Latvia	Nordea Life Holding AB	Sweden	Latvia
Norvik Investment	Norvik Bank	Latvia	Latvia
Hipo Fondi	Hipo and Land Bank	Latvia	Latvia
Finasta Asset Management	Finasta	Lithuania	Latvia
LHV Varahaldus	LHV Group	Estonia	Estonia
SEB Varahaldus	SEB Bank	Estonia	Estonia
Danske Capital	Danske Bank	Denmark	Estonia
Nordea Pensions Estonia	Nordea Life Holding AB	Sweden	Estonia
Swedbank Investment Funds	Swedbank Robur	Sweden	Estonia
Ergo Funds	Ergo Life Insurance	Germany	Estonia
Swedbank Investment Management	Swedbank Robur	Sweden	Lithuania
DNB Investment Management	DNB Bank	Norway	Lithuania
MP Pension Funds Baltic	MP Bank	Iceland	Lithuania

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SEB Investment Management	SEB Bank	Estonia	Lithuania
Finasta Asset Management	Finasta	Lithuania	Lithuania
Danske Capital Investment Management	Danske Bank	Denmark	Lithuania

Source: prepared by the author

2.1 DEA CRS, VRS and SFA models

Cost and capital efficiency DEA CRS, VRS and SFA models are implemented in the following sections. The models can be viewed as consisting of two cost types- actual costs and implied capital costs. Actual cost part of the models comprises administration and commission costs as input variables. The capital cost part of the models, which is also an input variable, comprises implied cost of capital defined as a required pre-tax return on equity, which is multiplied by average equity in a specific year. Three scenarios are used for calculation of implied cost of capital- pre-tax ROE of 11%, 15% and 19%. The choice of these figures is based on analysis of ROE developments in the banking and asset management field. The output variable of the models is commission fees generated in a specific year. Therefore, the whole cost and capital efficiency model has three input variables (i.e. costs) and one output variable (revenue). The model has three scenarios depending on pre-tax ROE discussed above. Results of Hipo Funds LV, which sold its pension fund management operations to SEB LV in 2012, are not included in results of 2014 and 2013. Therefore, there are 118 observations in total, which are made up from 20 companies for a time period from 2009 till 2014 except results of Hipo Funds in 2014 and 2013.

Pearson correlation is examined among results obtained by using DEA CRS, VRS and SFA models with three capital assumptions. Nine ordinary least square regression equations are established according to the following logic:

$$CE(DEA\ CRS\ 11\%) = \beta_1 * CE(SFA\ 11\%) + \alpha \quad (13)$$

where CE(DEA CRS 11%) stands for cost efficiency score of the DEA CRS model assuming ROE of 11%, CE(SFA 11%) is a cost efficiency score of the SFA model under the ROE assumption of 11% and β_1 is its coefficient while α is an intercept. The reasoning behind running regressions is to obtain significance variables, which witness about statistical significance of the equations. Furthermore, other eight regression equations were run to examine correlation among DEA CRS, VRS and SFA model results under three different capital scenarios (i.e. 11%, 15% and 19%). Statistical findings of the above-stated regression equations are summarised in the Table 2.

Table 1 Statistical findings of regression equations

Regression	Correlation	Adjusted coefficient of determination	Significance
ROE=11%, SFA and DEA CRS	0.792	0.624	0.000
ROE=11%, SFA and DEA VRS	0.647	0.414	0.000
ROE=11%, DEA VRS and DEA CRS	0.772	0.593	0.000
ROE=15%, SFA and DEA CRS	0.879	0.770	0.000
ROE=15%, SFA and DEA VRS	0.721	0.516	0.000
ROE=15%, DEA VRS and DEA CRS	0.786	0.615	0.000
ROE=19%, SFA and DEA CRS	0.803	0.642	0.000
ROE=19%, SFA and DEA VRS	0.705	0.493	0.000
ROE=19%, DEA VRS and DEA CRS	0.835	0.695	0.000

Source: prepared by the author

All regression equations demonstrate strong correlation, what means that in general results obtained by various efficiency assessment models are consistent. Moreover, all regression equations are found to be significant. However, the most scientific interest lies in the correlation between DEA and SFA model results. In particular, a correlation coefficient for regression equations comprising SFA and DEA CRS, ranging from 0.79

to 0.88, is higher than for equations with SFA and DEA VRS, which is in a range of 0.65-0.72. It speaks in favour of a fact that there are rather constant and/or somewhat increasing returns to scale than variable returns to scale, which might comprise both increasing and decreasing returns to scale. This conclusion is based on a shape of the chosen logarithmic formula of the SFA, which cannot at the same time take into account both increasing and decreasing returns to scale. Secondly, a very high correlation between DEA CRS and VRS regression equations also provides evidence that returns to scale are actually close to be constant. The correlation range is 0.77-0.84. Even though the three models described above generate consistent findings, it is important to take into account managerial considerations derived from expert interviews. Specifically, DEA CRS model could be considered to be unfair for smaller companies in terms of their business volume, however it produces the most comprehensive and easiest to interpret results. Any deviation from the top performers is considered to be inefficiency disregarding the fact whether it is caused by a smaller size of operations or inefficient processes. Thus DEA CRS is chosen as the primary model. DEA VRS model is comprehensive and easy to interpret from a production economic point of view. However, it is quite tricky from a managerial point of view because it assumes not only increasing returns to scale, but also decreasing returns within the same model.

Conclusion

Performance management problem triggered a fair amount of scientific discussion. A lot of scientific studies were made using both the Stochastic Frontier Analysis and Data Envelopment Analysis methodologies. Data Envelopment Analysis was first coined by Charnes, Cooper and Rhodes (1978) which had an input-oriented model with constant return to scale CRS. The initial framework on parametric frontier analysis commenced with Farrell's (1957) cross-sectional model where goal programming techniques were used to estimate production function.

The purpose of the article is to assess efficiency of pension fund management Baltic countries by using DEA CRS, VRS and SFA models under various ROE scenarios and compare results. Baltic countries in the given research are defined as Estonia, Latvia and Lithuania. Twenty pension fund management companies are included in the research. Cost and capital efficiency DEA CRS, VRS SFA models are implemented in the following sections. The models can be viewed as consisting of two cost types- actual costs and implied capital costs. Actual cost part of the models comprises administration and commission costs as input variables. The capital cost part of the models, which is also an input variable, comprises implied cost of capital defined as a required pre-tax return on equity, which is multiplied by average equity in a specific year. Three scenarios are used for calculation of implied cost of capital- pre-tax ROE of 11%, 15% and 19%. All regression equations demonstrate strong correlation, what means that in general results obtained by various efficiency assessment models are consistent. Moreover, all regression equations are found to be significant. However, the most scientific interest lies in the correlation between DEA and SFA model results. In particular, a correlation coefficient for regression equations comprising SFA and DEA CRS, ranging from 0.79 to 0.88, is higher than for equations with SFA and DEA VRS, which is in a range of 0.65-0.72. It speaks in favour of a fact that there are rather constant and/or somewhat increasing returns to scale than variable returns to scale, which might comprise both increasing and decreasing returns to scale. Secondly, a very high correlation between DEA CRS and VRS regression equations also provides evidence that returns to scale are actually close to be constant. The correlation range is 0.77-0.84. DEA CRS model could be considered to be unfair for smaller companies in terms of their business volume, however it produces the most comprehensive and easiest to interpret results. Any deviation from the top performers is considered to be inefficiency disregarding the fact whether it is caused by a smaller size of operations or inefficient processes. DEA VRS model is comprehensive and easy to interpret from a production economic point of view. However, it is quite tricky from a managerial point of view because it assumes not only increasing returns to scale, but also decreasing returns within the same model.

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*ECONOMETRIC ANALYSIS OF SELECTED UNEMPLOYMENT
FACTORS IN EU COUNTRIES OF DIFFERENT ECONOMIC
LEVEL IN THE YEARS 2006-2014*

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Abstract

The research problem the research problem of explicative was formulated, and that is as follows: which of the selected factors of unemployment is the greatest threat to the socio-economic security of the EU countries? That kind of scientific problem was put, because it is important from a cognitive point of view (Kuciński, 2010). Moreover, the undertaken issue is empirically verifiable, real and justified on the basis of modern European economies (see Kuciński, 2015).

Methodology / methods Due to the prevailing empirical nature of the work, it was decided to carry out the research based on two key research methods. The leading is the econometric analysis, (and therefore including the formulation of the econometric model and its estimation), but statistical analysis has also proved necessary (collection and interpretation of data describing the studied phenomenon).

Scientific aim General goals of the study was to answer the following research questions: Is it justified to classify EU countries into systems of higher, medium and a lower economic level bearing in mind the unemployment rate occurring in these countries? Which unemployment factor should be placed the main emphasis on, in scientific research and economic policies of countries? Does the type of factors that most affect unemployment depend on the economic level of the EU countries?

Findings The factors, which are determinants of unemployment level in the surveyed EU countries, should include both GDP and exports. Increased level of these variables adversely affects the change in the level of unemployment.

Conclusions The problem of unemployment both from a scientific and practical point of view, is a very important subject of macroeconomics. Therefore, it is worth examining the factors of unemployment in order to improve national policies that make the socio-economic situation of EU countries better.

Keywords: econometric analysis, unemployment, panel model, the EU countries, statistics

JEL Classification: C23, C50, E24

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Introduction

In today's world, all kinds of events, for example economical ones (more Křištofik, Lament et al., 2015), social or natural are almost always conditioned by the action of other phenomena. Therefore, the existence of relationships between the phenomena is often the subject of scientific inquiry. So, in the presented paper it was also decided to examine one of the many always fascinating phenomena, namely the problem of unemployment.

The study analyzed the impact of GDP (more Adamowicz & Walczyk, 2013) and exports on the level of unemployment in nine selected countries belonging to the European Union. Their choice was dictated by the criterion of the economic level. So, the first three countries i.e. Germany, United Kingdom and France belong to the well-developed countries, then, in the group of middle economy level was Sweden, Belgium and Poland. Finally, Slovenia, Lithuania and Latvia were qualified to the least economically developed countries. Therefore, the analysis consisted of nine countries differentiated by the economic level, and test period was also reduced to nine years, i.e. from 2006 to 2014. The study did not include the last year, i.e. 2015 due to lack of data at the time of preparation of the proposed analysis. It is worth noting that in the work on the model, software GNU Regression Econometric and Time-Series Library - Gretl was used, which provides advanced econometric methods.

1 Theoretical analysis of unemployment

Undoubtedly, the aspect of unemployment is a very important subject of macroeconomics (Romer, 2011). Because in all economies, almost every time, there is a certain group of people classified as unemployed. Generally it can be assumed that unemployment is the total number of people who are actively seeking employment, but remaining without work at present (Krugman & Wells, 2016).

It should be emphasized that during the recession, employment declines with the production, and it increases again during recovery. In the long time period the employment increases with the potential GDP, as companies hire more workers to give more production.

Unemployment is a resource, the size of which is measured at a specific time. The unemployment rate is increasing, if supplies (the unemployed, who have just lost their jobs) are greater than outflows (people who found a new job, or have ceased to fall within the labor force) (Begg, Vernasca et al., 2014).

Economists usually distinguish four basic types of unemployment. Therefore, referring to the causes of unemployment, there are the following types of unemployment: frictional, structural, resulting from the shortage of demand, classic. Concise definitions of these types of unemployment are shown below, in the Table 1.

Table 1 Definitions of unemployment types

Frictional unemployment	It is impossible to reduce the minimum level of unemployment, occurring in any dynamic society
Structural unemployment	Created by the inadequacy of the qualifications of employees and the employers' needs in a situation where the structure of demand and production is constantly changing
Unemployment resulting from the shortage of demand	Otherwise known as Keynes unemployment, it occurs when actual production is lower than the potential output
Classic unemployment	It is the type of unemployment which appears when the wage is deliberately maintained above the level at which the curves of labor supply and demand for labor intersect

Source: Kosztowniak & Sobol, 2016

2 Model

From the previous discussion it could be deduced that the study will be conducted on panel data, namely those which are observed in at least two dimensions (Gorecki, 2013). In other words, this type of data is a two-dimensional variable, conditioned by time and space. So, in the proposed article, unemployment in the EU countries in the years 2006-2014 was examined. Assuming that the index $i = 1, 2, \dots, N$ designates further areas (countries), and the index $t = 1, 2, \dots, T$ means units of time (see Table. 2), then the constructed model will have the form:

$$\ln B_{it} = \alpha_{it} + \ln GDP_{it} + \ln Exit_{t-1} + \ln Exit_{t-1} + v_{it} \quad (1)$$

where $\ln B_{it}$ - **dependent variable**: the natural logarithm of unemployment ECU / EUR

independent variables:

$\ln GDP_{it}$ - the natural logarithm of GDP ECU / EUR

$\ln Ex_{it}$ - the natural logarithm of exports ECU / EU

$\ln Ex_{it, t-1}$ - the natural logarithm of exports ECU / EUR delayed by one year

α_{it} – the structural parameter of the model

v_{it} – total random error (consisting of a purely random part ε_{it} and the effect of individual u_i , so $v_{it} = \varepsilon_{it} + u_i$) (Kufel, 2016).

Table 2 Assignment of indices for individual countries and periods

	i	t
1	Germany	2006
2	United Kingdom	2007
3	France	2008
4	Sweden	2009
5	Belgium	2010
6	Poland	2011
7	Slovenia	2012
8	Lithuania	2013
9	Latvia	2014

Source: own elaboration

The following Table 4 presents a summary of the statistical data describing the nine analyzed countries in terms of the examined indicators in the years 2006-2014. The data used are the balanced panel (more Franc-Dąbrowska, 2016).

3 The results of model estimation

The results of the model described above are shown in the following tables and charts, and the results of the most important and also the necessary tests are provided beneath.

Table 3 Model 1: Panel OLS estimation using observation 72, 9 cross-sectional data units are included, Time series length = 8; The dependent variable (Y): $\ln B_{i,t}$

	<i>Factor</i>	<i>Standard error</i>	<i>Student's t</i>	<i>p-value</i>	
const	1,32562	0,735486	1,8024	0,0759	*
$\ln GDP_{i,t}$	1,50757	0,194545	7,7492	<0,0001	***
$\ln Ex_{i,t}$	-0,0892206	0,221428	-0,4029	0,6883	
$\ln Ex_{i,t-1}$	-0,843891	0,289362	-2,9164	0,0048	***
The arithmetic mean of the dependent variable	13,22658		The standard deviation of the dependent variable	1,361256	
The sum of residuals squared	16,72344		The standard error of the residues	0,495916	
Coefficient of determination R-square	0,872888		Adjusted R-squared	0,867280	
F(3, 68)	155,6533		P-value of F	2,17e-30	
Logarithm of the likelihood Function	-49,60879		Akaike Information criterion	107,2176	
Schwarz's Bayesian criterion	116,3243		Hannan-Quinn criterion	110,8430	
Autocorrelation of residues - rho1	0,775723		Durbin-Watson statistics	0,237997	

*** variable statistically significant at the 0.01 level of significance.

** variable statistically significant at the 0.05 significance level.

* variable statistically significant at a significance level of 0.1

Source: on the basis of the program GRET

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Table 4 The rate of unemployment, GDP and export in selected European countries

Germany	B_i_t	GDP_i_t	Ex_i_t	Sweden	B_i_t	GDP_i_t	Ex_i_t	Slovenia	B_i_t	GDP_i_t	Ex_i_t
2006	4104000	2516614090	996764409	2006	336300	357036247	167080745	2006	60800	35189310	21406086
2007	3473000	2598965874	1088519637	2007	297500	369326425	174619289	2007	49900	37647059	24385246
2008	3018000	2627384615	1109970090	2008	304700	367361835	177991886	2008	45500	38894575	25379171
2009	3098000	2480141129	951893552	2009	408300	348368954	152323009	2009	61000	35841584	21165644
2010	2821000	2580100000	1090100000	2010	425000	369100000	170500000	2010	75400	36300000	23300000
2011	2399000	2673689416	1180799220	2011	390000	378765201	180861244	2011	83000	36498516	24952015
2012	2224000	2685087719	1212344498	2012	403000	377946429	182588454	2012	90000	35502959	25071225
2013	2182000	2694173830	1232564841	2013	411000	382616330	181291548	2013	102000	35127202	25812620
2014	2090000	2735178236	1281923077	2014	411000	391454545	187573386	2014	98000	36178468	27272727
Britain				Belgium				Lithuania			
2006	1640000	1825929204	538925542	2006	303200	349411765	259768908	2006	88000	28419811	15090090
2007	1624000	1872970639	530219256	2007	353000	360942408	274511819	2007	64000	31487514	15531915
2008	1757000	1863671875	537093496	2008	333400	363926002	279405941	2008	88000	32376238	17674858
2009	2369000	1785438972	490032859	2009	379600	355555556	252824268	2009	211000	27533265	15401540
2010	2459000	1813300000	518000000	2010	405900	365100000	279100000	2010	270000	28000000	18300000
2011	2559000	1849355798	548038278	2011	347000	371666667	297882579	2011	228000	29752852	21076233
2012	2534000	1870309654	552500000	2012	369000	372142171	303136882	2012	197000	30833333	23590633
2013	2441000	1911038354	559252507	2013	417000	372227488	307824427	2013	172000	31992687	25903084
2014	1995000	1967947598	569100623	2014	423000	377212806	324397300	2014	158000	32881662	26666667
France				Poland				Latvia			
2006	2482000	1969500531	521325052	2006	2311000	305133929	116000000	2006	78000	20306966	8293269
2007	2268000	2016269430	535837564	2007	1579000	327111575	127941176	2007	68000	22332016	9415584
2008	2121000	2020141700	537992126	2008	1165000	339906542	136935167	2008	88000	21542553	9628887
2009	2622000	1960566229	477300614	2009	1359000	348891353	128199566	2009	193000	18441815	8429926
2010	2680000	1998500000	520500000	2010	1650000	361700000	144800000	2010	206000	17800000	9500000
2011	2665000	2040931615	556462585	2011	1659000	379820180	156231884	2011	167000	18837863	10714286
2012	2852000	2043976494	570114943	2012	1749000	385827552	163267233	2012	155000	19642857	11718750
2013	3014000	2056948494	580000000	2013	1793000	390693069	173339658	2013	120000	20212766	11896552
2014	3026000	2060289855	593404462	2014	1567000	403536346	184389782	2014	108000	20807726	12205754

Source: AMECO database, www.ec.europa.eu, [access 15/01/2016]

Excluding constant, the largest p-value is for variable 8 (l_Ex_i_t)

Chow test for structural changes in the distribution of sample in observation 5: 5 -

The null hypothesis: the lack of structural changes

The test statistic: $F(4, 64) = 7.15204$

The value of $p = P(F(4, 64) > 7,15204) = 7,97671e-005$

Test for non-linearity (squares) -

The null hypothesis: the relationship is linear

The test statistic: $LM = 0.618799$

The value of $p = P(\text{Chi-square}(3) > 0.618799) = 0.892116$

Test for non-linearity (logarithms) -

The null hypothesis: the relationship is linear

The test statistic: $LM = 0.706591$

The value of $p = P(\text{Chi-square}(3) > 0.706591) = 0.871653$

Table 5 White's test for the heteroskedasticity of residues (variability of residual variance), KMNK estimation, using 72 observations, The dependent variable (Y): uhat^2

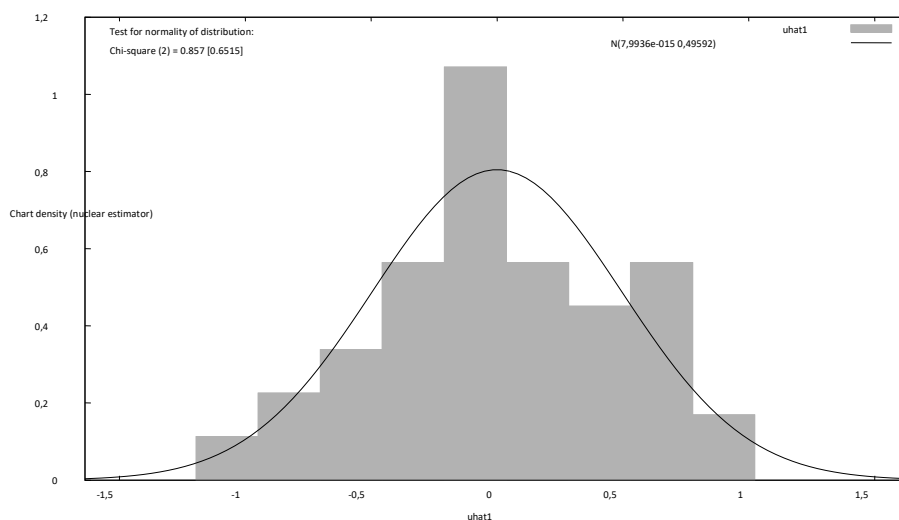
	factor	standard error	Student's -t	p-value	
const	-15,7733	4,52366	-3,487	0,0009	***
l_GDP_i_t	1,4684	1,50656	0,9747	0,3335	
l_Ex_i_t	3,40843	4,062	0,8391	0,4046	
l_Ex_i_t_1	-3,10949	3,88005	-0,8014	0,426	
sq_l_GDP_i_t	-0,929387	0,250308	-3,713	0,0004	***
X2_X3	1,19089	1,39816	0,8518	0,3976	
X2_X4	0,673141	1,41225	0,4766	0,6353	
sq_l_Ex_i_t	-0,248182	0,32435	-0,7652	0,4471	
X3_X4	-0,911730	1,24954	-0,7297	0,4683	
sq_l_Ex_i_t_1	0,175294	1,3443	0,1304	0,8967	

Source: based on the program GRETL

Coefficient of determination R-squared = 0.493126

The test statistic: $T^2 = 35.505058$,

with a value of $p = P(\text{Chi-square}(9) > 35.505058) = 0.000049$



Source: based on the program GRETL

Figure 1 Test for normality of Distribution, The frequency distribution for uhat1, observations 1-81, the number of intervals = 9, mean = 7,99361e-015, standard deviation = 0.495916

Table 6 The frequency distribution

Intervals	mean	number	frequency	cumulated
< -0,94845	-1,0717	2	2,78%	2,78%
-0,94845 -	-0,70197	4	5,56%	8,33% *
-0,70197 -	-0,45549	6	8,33%	16,67% ***
-0,45549 -	-0,20900	10	13,89%	30,56% *****
-0,20900 -	0,037481	19	26,39%	56,94% *****
0,037481 -	0,28396	10	13,89%	70,83% *****
0,28396 -	0,53045	8	11,11%	81,94% ***
0,53045 -	0,77693	10	13,89%	95,83% *****
>= 0,77693	0,90017	3	4,17%	100,00% *

Source: based on the program GRETL

Missing observations = 9 (11.11%)

The null hypothesis: empirical cumulative distribution has a normal distribution. Doornik-Hansen's test (1994) - transformed skewness and kurtosis .:

Chi-square (2) = 0.857 p-value of 0.65149

Collinearity rating VIF (j) - factor of variance inflation

VIF (Variance Inflation Factors) - the minimum possible value = 1.0

Values > 10.0 may indicate a problem of collinearity - variance inflation

l_GDP_i_t 35,498

l_Ex_i_t 37,789

l_Ex_i_t_1 61,654

VIF (j) = 1 / (1 - R(j) ^ 2), where R(j) is a multiple correlation coefficient between the variable 'j' and other independent variables of the model.

Parameters of matrix X'X:

1-norm = 81692.447

Determinant = 434579.04

Indicator of matrix conditioning CN = 4,4946008e-006

Diagnostics for the balanced panel of 9 units in cross-section for 8 periods

Table 7 Estimated fixed effects (non-random effects) that take into account the diversity of free expression according to the units in the cross section (coefficients, standard errors in brackets, the p value in square brackets)

const: 68,881 (10,663) [0,00000]
l_GDP_i_t: -3,9443 (0,61108) [0,00000]
l_Ex_i_t: 0,1176 (0,097669) [0,23330]
l_Ex_i_t_1: 1,0111 (0,26772) [0,00037]

Source: based on the program GRETL

9 group means including data:

residual variance: $2,52006 / (72 - 12) = 0,042001$

The total significance of group means inequality:

$F(8, 60) = 42,271$ with a p value $7,48346e-022$

(A low p-value means the rejection of the hypothesis H0 that the panel model OLS is the correct one, regarding hypothesis H1 that the model with fixed effects is more appropriate.)

Means of residues for cross-section units in OLS panel estimation:

unit 1: 0,18426

unit 2: -0,13271

unit 3: -0,087653

unit 4: -0,53543

unit 5: -0,061224

unit 6: 0,7235

unit 7: -0,52726

unit 8: 0,29411

unit 9: 0,14241

Breusch-Pagan's test statistic:

LM = 74.8123 with a p value = $\text{prob}(\text{chi-square}(1) > 74.8123) = 5,1765e-018$

(A low p-value means the rejection of the hypothesis H0 that the OLS panel model is the correct one, regarding hypothesis H1 that the random effects model is more appropriate.)

Variance estimators:

between = 0,243747

within = 0,042001

theta used for quasi-demeaning = 0,853237

Table 8 Estimated random effects allow for a unit-specific component to the error term (coefficients, standard errors in brackets, the p value in square brackets)

const: 0,46116 (2,3874) [0,84741]
l_GDP_i_t: -0,01362 (0,30512) [0,96453]
l_Ex_i_t: -0,028736 (0,12535) [0,81936]
l_Ex_i_t_1: 0,72667 (0,32958) [0,03085]

Source: based on the program GRETL

Hausman test statistic:

$H = 58,3766$ with a p value = $\text{prob}(\text{chi-square}(3) > 58,3766) = 1,30616e-012$

(A low p-value indicates rejection of the null hypothesis of the model with random effects, against alternative hypothesis of the model with fixed effects.)

RESET test for specification (squared and cubed variable)

The test statistic: $F = 13,113960$,

with a p value = $P(F(2,66) > 13,114) = 1,6e-005$

RESET test for specification (only squared variable)

The test statistic: $F = 0,173519$,

with a p value = $P(F(1,67) > 0,173519) = 0,678$

RESET test for specification (only cubed variable)

The test statistic: $F = 0,122666$,

with a p value = $P(F(1,67) > 0,122666) = 0,727$

4 Discussion

Following this analysis, it can be said that the chosen model is suitable for forecasting. As the share of standard error of residuals to the arithmetic mean of the dependent variable does not exceed 10%.

After analysis of the determination coefficients value to presupposed minimum value it can be concluded that the tested model is very well-adapted.

The distribution of the residues is compatible with the normal distribution, moreover, the constructed model does not include autocorrelation of residues.

The relationship between the variables is linear.

Furthermore, based on the arguments below, it is considered that the specific of the model is correct, because:

- a set of independent variables was selected appropriately;
- there is a correct functional form;
- correct dynamic structure of the model was used (one year delay in the case of export).

In this part of the analysis it is worth, though in a concise way, mentioning certain macroeconomic law, namely the Law of Okun. Briefly, its discoverer - (Arthur Okun) claimed that with the increase in involuntary unemployment, GDP (GNP) declined (more Abel & Bernanke, 2014). He believed, moreover, that there was the following relationship: for each 2% GDP real decline compared to potential GDP, the unemployment rate increased by 1 percentage point (Ref. Case et al., 2012). Thus, the unemployment rate above a certain limit has a negative impact on GDP and reduces it accordingly below the possibility of potential output.

Since the seventies of the twentieth century research has continually been done on the role of exports in economic growth. However, despite numerous results stemming from econometric analysis it has not yet been possible to determine a uniform (common) stance in this matter. The research conducted by A. Cruger., B. Ballasa and T. Hatcher demonstrates positive influence of exports on economic growth whereas P. J. Marshall and W. Jung and S. Dodaro, for example, have adopted a diametrically opposite stance. Consequently, further research in this area is especially legitimate. Thus S. I. Bukowski and J. Garlińska-Bielawska have investigated to what extent exports to Germany is a key factor of economic growth in Poland. With this end in view the authors made an econometric analysis based on VAR model (Bukowski & Garlińska-Bielawska, 2014).

Conclusion

To sum up, the aim of the research was to analyze the relationship between changes in GDP and exports, and changes in the level of unemployment in the years 2006-2014. The panel model was built, the annual data, describing the nine countries selected for analysis, was used. Model estimation was made through classical least squares method using the program GRETTL.

Results of the analysis presented in the work allow us to formulate the following conclusions:

- analysis of the panel is useful for solving problems related to exploration of determinants influencing the unemployment level in the surveyed EU countries;
- the factors, that are determinants of unemployment level in the surveyed countries, include both GDP and exports. Increased level of these variables negatively affects the change in the level of

unemployment. This identification allows to improve national policies and to focus on those actions which result very much in improving socio-economic situation of EU countries.

- level of GDP, in a statistically significant way, affected the volatility of the unemployment level, however, the change in GDP had stronger impact on formation of the unemployment level than in the case of changes in export (that is why the hypothesis 1 and 2 are confirmed);
- export of goods and services is an indirect factor affecting reduction of unemployment level in the analyzed countries of the EU in the years 2006-2014 - which proves correctness of the hypothesis No. 3.

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*DO WE NEED MORE FIRE PROTECTION UNITS AS AN IMPACT OF
POPULATION AGING AND INDUSTRY 4.0 IN THE CZECH REPUBLIC?*

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Abstract

Purpose of the article The Czech Republic entered the stage of population aging. In addition, the Czech Republic might challenge an impact of Industry 4.0. As a consequence, it is to expect that more people will stay at home in order to spend there more time either as elderly, jobless or pensioners. Thus, more fire risk which might impact on public spending on fire protection might emerge. The paper deals with an impact of population aging and Industry 4.0 on the national capacity for fire protection in the Czech Republic.

Methodology/methods The authors made an attempt to know if more or less fire protection units will be needed as ongoing population aging and Industry 4.0 implementation will continue. Therefore, they construct a dynamic model in simulation software Stella. System Dynamics is a useful and effective method for the investigation of complex social systems. As an input, demographic data provided by Czech Statistical Office and fire statistics provided by the Fire and Rescue Service of the Czech Republic have been used.

Scientific aim The initial Stella model will be developed into more complex model further because simulation proved that there should be an impact of demographic aging and the fourth industrial revolution on need of fire protection capacity. More fire protection units should be needed; however, number of fire protection units has been decreasing in the Czech Republic since 1986. Most of them are run by municipalities and operated by volunteers, hence, the fire protection is inexpensive and substitution volunteer fire protection units by Fire and Rescue Service of the Czech Republic might cause an increase of public spending.

Findings Aging population and unemployment affects the number of interventions FRS. Reducing the number of members of the FRS in the future could cause problems.

Conclusions (limits, implications etc) A simple model confirmed possible problems, but the question merits a deeper analysis.

Keywords: Aging, Industry 4.0, Fire and Rescue Service, model

JEL Classification: M15, M21

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Introduction

The Czech Republic and other European Union's countries should challenge significant structural changes induced by such phenomena as population aging and the fourth industrial revolution. From the large number of publications dealing with an aging population, we mention at least one basic fact from WHO: Between 2015 and 2050, the proportion of the world's population over 60 years will nearly double from 12% to 22% (WHO, 2016).

Currently, creation of industrial value forms a development towards the fourth degree of industrialization, so-called industry 4.0. This development provides huge opportunities for the realization of sustainable production (Stock, 2016). The main ideas of Industry 4.0 were first published by Kagermann et al (2011). Basics for Industry 4.0 were published in 2013 in the German National Academy of Science and Engineering (ACAT) (acatech 2013). For Europe, Public-Private Partnership (PPP) on Factories of the Future (FOF) develops industry 4.0 and related topics (EC 2015). In the United States is industry 4.0 supported by Industrial Internet Consortium (ICC) (ICC 2015). Basis of Industry 4.0 is made up of three components (Plattform Industrie 4.0 2015), (acatech 2013), (VDI/VDE-GMA 2015): (1) horizontal integration across the network value creation, (2) end-to-end engineering across the product life cycle, as well as (3) vertical integration and networking manufacturing systems.

Moreover, if almost each public policy coping with supplying public with public goods and services would be based on population and economic growth paradigms up to now, it will be suspected of failing in the upcoming murky future. One of such national policy can be considered the policy of fire protection and firefighting which is in charge of the Czech Republic.

With respect to lack of studies dealing with impact of above mentioned phenomena on the Czech economy and society, the paper has the objective to provide some points on such impact on fire protection in the Czech Republic. In view of the fact that this paper is limited by six pages, authors attempted to demonstrate this impact with the assistance of simple simulation model constructed in Stella software and using data provided by Czech Statistical Office (CZSO) and the Fire Rescue Service of the Czech Republic (FRS) as time series.

1 The fire protection in the Czech Republic and expectations linked with population aging and the fourth industrial revolution in the Czech Republic

In order to understand a simple dynamic model focusing on an impact of population aging and the fourth industrial revolution on the fire protection in the Czech Republic, some points linked with organization of fire protection in the Czech Republic ought to be mentioned. First of all, the fire protection is a public good in charge of the state. Thus, the state is responsible for public policy and regulation of firms and households. In the triangle polity model "market-households-state" (Pestoff, 1992; Abrahamson, 1995; Benáček 2005), the state is the predominant participant determining the fire protection agenda.

In order to carry out such agenda, the state runs the Fire and Rescue Service of the Czech Republic as a central institution in charge of capacity and capabilities for emergency planning, firefighting, contingency operation, and specific statistics. This statistics provides a bunch of information on number of fires, their roots, which region and district flamed up in, how much casualties there were, etc. In addition, the annual statistics focused on other effort done by FRS such actions of technical relief, lifesaving during floods, demolitions, and so on. Besides, the FRS yearbooks (FRS 1997-2014) contain pieces of information about quantity and quality of fire protection unit operating in the area of the Czech Republic.

When we analysed data on fires with data on population published by CZSO (1997-2015) we have found that there is a correlation with number of population and fires as a product of human activity. Therefore, population aging may affect the output of FRS, the extent of FRS capacity as well as the cost of fire protection in the national budget. If the impact of the fourth industrial revolution in the Czech Republic is a significant reduction of jobs (Marek, 2015) more people will spend their working age on welfare at home. So an increase of fires might be expected. Furthermore, number of volunteering fire fighters units is expected to be reduced due to rural depopulation and degradation of public health.

2 Simple dynamic model of fire protection in the Czech Republic

System dynamics was presented by Forrester (Forrester, 1961) as a technique for demonstrating and analysing the behaviour of complex social systems, especially in a mechanical setting. It has been utilized to look at different social, economical and ecological frameworks (Wolstenholme, 1990), where an all encompassing perspective is important and input circles are basic to understanding the interrelationships.

The methodology was developed especially with a consideration of the late development of PC programming that turned out to be accessible for managers to implement system dynamics.

System dynamics is a computer-aided approach to policy analysis and design. It applies to dynamic problems arising in a complex social, managerial, economic, or ecological systems - literally any dynamic systems characterized by interdependence, mutual interaction, information feedback, and circular causality.

It is important for System Dynamics to be legitimately utilized as a strategy. Sterman (2000) writes: "*system dynamics is a perspective and set of conceptual tools that enable us to understand the structure and dynamics of complex systems. System Dynamics is also a rigorous modeling method that enables us to build formal computer simulations of complex systems and use them to design more effective policies and organizations*".

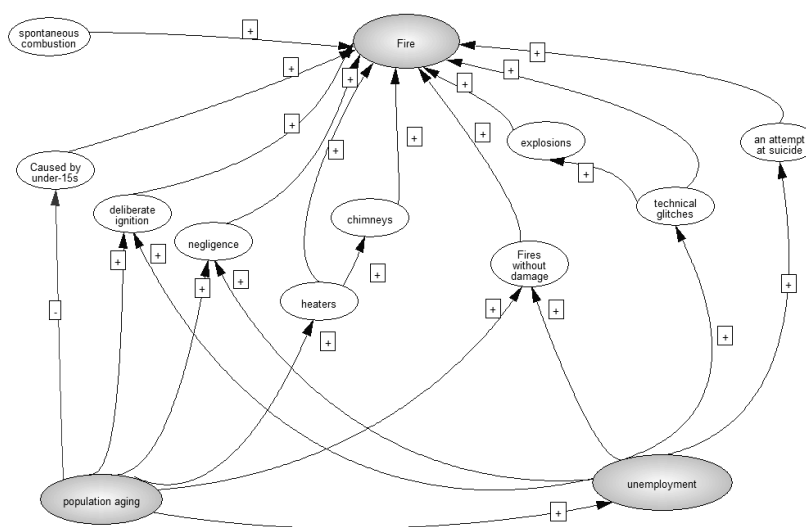
2.1 Modeling procedure

First, we have compiled simple Causal loop diagram for an overview of dependencies. Causal loop diagram consists of a plurality of nodes representing variables and a plurality of arrows showing the relationships between them (Anderson & Johnson, 1997).

The plus sign indicates a positive correlation, where the increase/decrease in the first variable will cause an increase/decrease in the second variable. The minus sign indicates a negative correlation with increase/decrease in the first variable causes a decrease/increase in the second variable.

Diagram on figure 1 shows a simple causal relationship between the population aging, unemployment and causes of fire. The trend of population aging have the opposite effect on the number of fires caused by children under 15 years. The trend of population aging have the same effect on the number of fires caused by the remaining causes of fires, listed in Figure 1. With the increasing number of elderly people, a growing number of accidents caused by old age, partial clumsiness and their increased need for heat.

The aging population will lead to an increase in the number of people. More people leads to fewer jobs and this leads to higher unemployment. Unemployment is likely to be enhanced including through the introduction of Industry 4.0., supports increasing incidents such as carelessness, technical and suicide attempts.



Source: own work

Figure 1 Simple Causal Loop Diagram of Fire Caused

Second, we have compiled a blind model, with basic elements. The model is made up according to System Dynamics Approach, especially the STELLA software (Iseesystems, 2015), where there are the basic elements "Stock, Flow,

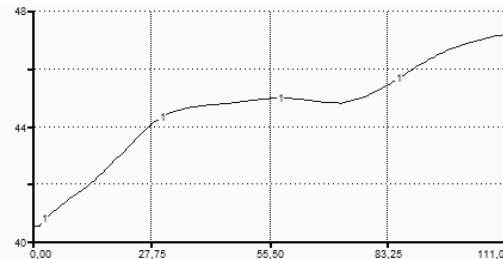
Converter and Connector".

- 1 Stocks, the rectangle, has four varieties: reservoirs, conveyors, queues and oven. The most frequently used type of stock is the reservoir. The Stock represents the main quantity that is to be accumulated (e.g., population, money in bank account, etc.). The value increases or decreases over time.
- 2 Flows, the arrow, has three varieties: a uniflow, a biflow and a unit converted flow. Flow represents activities that cause the stock value to increase or decrease.

- 3 Converters, the circle, represents a rates or relationships. A converter is used to represent additional logic important to the model. It is often a modifier for the flow.
- 4 Connector serves either as an information wire or as an action wire.

The next step was filling system dynamics data elements and functions. Dependence on the aging population should be demonstrated in a functional population model.

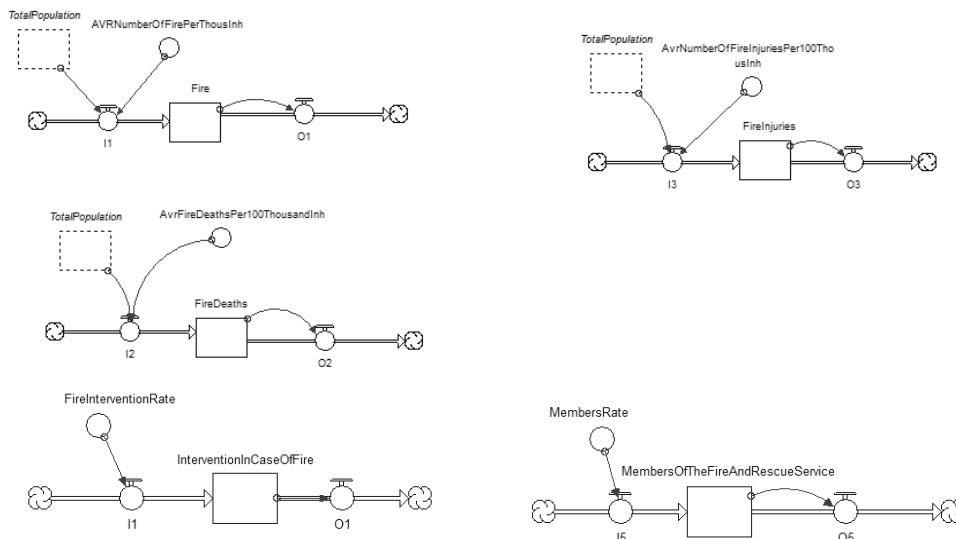
The basic diagram is the population of ČR, based on available statistical data and the median prediction of the population of the Czech Statistical Office. Model of the population has been written from available data on the current development of the population from CZSO. From this model comes the data shown in the graph 2. The graph shows a noticeable increase in the average age of the population in the country. Data are shown for the years 2013 and 2115.



Source: own work

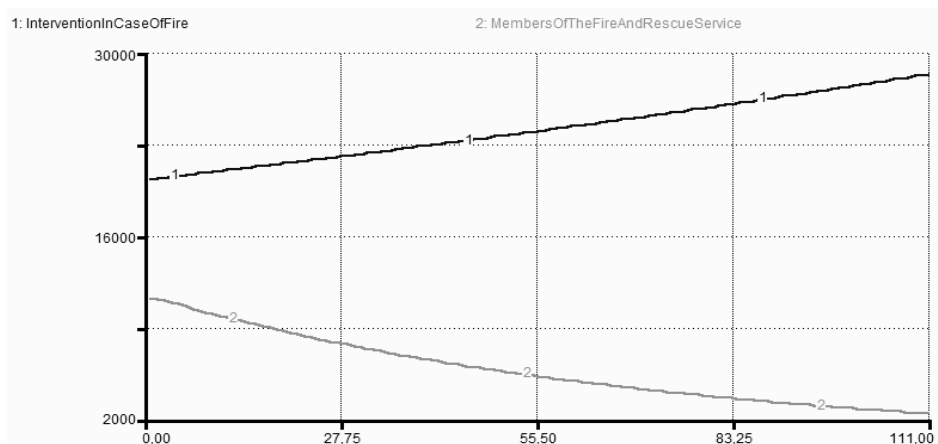
Figure 2 Predictions average age of the population of the Czech Republic in the years 2013-2115.

The trend functions were created by processing of basic data from the statistical yearbook „Fire Brigade“. Application of these functions and connecting with a population model for Czech Republic, in the model shown in Figure 3, emerged as the main result of the graph shown on figure 4.



Source: own work

Figure 3 Simple model, system dynamics of FRS system



Source: own work

Figure 4 Trend prediction of Case of Fire intervention and Fire and Rescue Service Members.

In figure 4 is shown an evident increase of the potential for interference Fire Rescue fire and currently decreasing trend in the number of members of FRS. This trend is the widening gap is likely to grow. The graph shows the expected conduct of the data from time 0 in 2013 and ends with the 111th step in 2115.

3 Discussions

Simulations presented above were simplified. More sophisticated models should be developed due to dynamics of adaptation. On the one hand, the Industry 4.0 will affect the economy; on the other hand, FRS providing public good of fire protection is a part of it. Ergo, FRS should benefit from the fourth industrial revolution by increasing its productivity as well.

Conclusion

A basic model that highlights the ignoring of causality of the aging population, the planned Industry 4.0 and downsizing of FRS, was presented. For partial results we present the model creation.

Fire protection units will be needed more because the population is aging, as shown in Figure 2. In accordance with the trend of fire brigade intervention by the fire, the number of hits will grow (Figure 4) while there is a higher unemployment which may result in more accidents. Aging of population in Czech Republic has been proven.

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THE OPTIMIZATION IN THE USE OF TOURISM MANAGEMENT

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Abstract

Purpose of the article Through the study and the application of optimization, the article is searching for solutions to essential tourism and tourism enterprises problems, concerning the management and competitiveness. It is also assumed that optimization is inherent of tourism enterprises, considering that in order to compete successfully, their activity must be optimized, according to the environmental dynamics, while taking into account the limit of the available resources

Methodology/methods Optimization can be done through continuous improvement or reengineering. In the article, the general formulation of the optimization problem is based on the assumption that each object/site (in this case, tourism enterprises), is characterized by X input and Y output parameters, defining its status in due time. These parameters associated with system functions, compile the mathematical model.

Scientific aim Here, the subject of research is the tour operator agency and the managerial influences exerted on it, i.e. the internally integrated set of contents, organizational forms, actions and managerial methods used and developed with regard to the business. They are mutually determined and ensure the achievement of the goal set - deducing a specific model to be applied for the improvement of the tour operator agency management for the needs of its sustainable and competitive functioning.

Findings The optimization process is part of the tour operators' activity and life cycle. Wide spread belief is that optimization extends only to pure technological aspects of the process and ignores the other lesser important issues, such as management and tourism competitiveness. The above stated is a result of the presumption that the primarily effects of the optimization can be obtained only by hi-technical equipment, ignoring the usage of a variety of elements implemented directly or indirectly in the tourism products, businesses and destinations life's cycle.

Conclusions The optimization model of a given system – in this case a tour operator's agency - builds up abstractly and in a simplified way its actual parameters. It also sustains the clarification about the interrelations between the work processes, information flows, production times, costs, capacity, influencing decisively tour operators' competitiveness.

Key words: management, tourism, optimization, quality and competitiveness

JEL Classification: C 5, C 53

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Introduction

People optimize. Nature optimizes (Nocedal & Wright, 2006). The optimization's necessity for managing issues is due to the ongoing changes in market conditions. For an activity to be competitive, it must be optimized according to the environmental dynamics, while taking into account the limit of the available resources (Chong & Zak, 2013; Hammer and Champy, 2001; Gill, Murray & Wright, 1981). Accepting that effective activity automation leads to multiplication of its effectiveness and respectively its inefficiency multiplies as well.

In its wide scope, the management optimization of tourism has serious impact on the quality of tourist services aimed at achieving the optimal form for the user, respectively competitiveness. In this context, the purpose of modeling the competitiveness of the tourism business - in this case tour agency - through optimization can generally be defined as performance improvement of cost, quality and time. The process can be decomposed into a set of highly complex tasks requiring specific management approaches facilitating the achievement of strategic objectives, along with increasing the efficiency of processes.

Optimization can be done through continuous improvement or reengineering, as reengineering brings fundamental changes in the way of working, for its successful implementation is needed substantial financial resources and substantial management support. Using advanced software products such as ARIS software for describing and analyzing business processes, for example, allowing accelerated optimization, because it gives performance variation of both the current and the future state processes in order to choose the most optimal for the case option (Jovalekic, Ikhvani, Boissard, 2002).

1 Methodological framework

The performance of the overall business processes optimization generally, and particularly in tourism, is to be based on conditions clarification under which optimization issue solving appears (Goldratt, Cox, 1992). In general, they are reduced to a/ research objects when there are multiple conditions of the site, b/ facilities management, c/ sites designing and d/ renovation (renovation) of existing facilities and systems. Each of these methods has its advantages and drawbacks (Georgiev et al., 2012).

To construct the optimization problem should be taken upon determination of site optimization. The term can denote any manufacturing process, device, or system of objects in a given time interval. And the corresponding objective function (Z), which is quantified assessment of the site and comparative analysis across states. Objective function is defined by the target to the object. It can be technical (mass consumed material), process (extraction), economic (cost and profit) and mixed feasibility. The best value of the objective function is referred to as minimum or maximum. Next step is to determine controllability level of the site optimization and the liberty or control impacts levels.

The general formulation of the optimization problem is based on the assumption that each object/site (in this case, travel agencies, regarded as an object), characterized by X input and output parameters Y , defining its status in due time. These parameters associated with system functions, compile mathematical model of the site, namely:

$$Y_j = F_j(X, X_c, X_k) \quad j = 1, 2, \dots, G \quad (1)$$

The settled input parameter in mathematical model allows a finite number of calculations to determine the output parameters, i.e. to predict the behavior of the object. In optimization methods assume that the mathematical model of the object is unknown.

$$X = \{x_1, x_2, \dots, x_n\}$$

is a vector of control parameters defined in n -dimensional Euclidean space. In mathematics, Euclidean space is a linear space, which can be defined notions of vector length and size of the angle between two vectors

Control parameters can be modified at will according to specific requirements, i.e. they allow you to manage the site.

$$Y = \{y_1, y_2, \dots, y_G\} \text{ is a vector of output variables.}$$

$X_c = \{x_{c1}, x_{c2}, \dots, x_{cp}\}$ is a p -dimensional vector of permanent or conditional permanent parameters of the object.

$$Q = Q(X, Y) \quad (2)$$

taking into account (1.1), the objective function depends only on the control parameters, i.e.

$$Q = Q(x_1, x_2, \dots, x_n) \quad (3)$$

In many cases, the criterion of optimality can be expressed not only by a targeted parameter, and with multiple criteria and etc. vector quality criteria ie

$$Q_m = Q_m(X), \quad m = 1, 2, \dots, M \quad (4)$$

Current tourism issues and tourism enterprises managing multiple parameters X can be limited by technology, time, price and other considerations. There is admissible control parameters space Tx for the above mentioned parameters.

$$x_n^{\min} \leq x_n \leq x_n^{\max} \quad n = 1, N \quad (5)$$

This statutory limit can be defined as a factors'.

In optimization tasks it is important to clarify the types of independent variables. They are defined as continuous independent variables, discrete independent variables, integer variables independent, independent Boolean variables.

The optimization tasks can be divided into species and varieties. We can differ linear optimization tasks and tasks of nonlinear optimization. The overall task of a linear optimization is linear target function and regional and functional constraints are linear as well. Task solving in the field of optimization requires specific algorithm following in terms of logical sequence and calculations in order to implement the decision making method (Bandy, 1988; Vitliemov, 2003).

2 Optimizing the tour operator's activities

The method of optimization is the most important prerequisite for solving optimization issues as its fundamental nature is the process of searching for the best result, regardless of the nature of the object in order to optimize specific performance goal. Optimization methods have general character and depending on objects' type and purpose one of them can be preferred. Usually it is not possible to recommend a single method for solving all optimization problems that arise in practice. The particular method is determined by site/objection's requirements and correct formulation of the optimization problem.

Basically optimization study can be conducted by experimenting with the scheme:

"Management effects - Output - New control action."

In practice, however, such research is usually based on a mathematical representation of the object or system through a mathematical model. Based on such, the target function and performance criteria are formed. Consequently, the majority of the optimization issues are introduced and it is required for them to have an adequate object model. In even greater detail, mathematical models allow for "numerical experiments" and most economical studies are influenced by control parameters on the quality of the existing system or on the criterion of efficiency of the programmed (new) systém (Stankova, Grachka, 2013).

The tour operators' business has a complex character and at the same time is fundamental for the tourism industry. It aims at creating, offering and selling goods and services establishing a particular end product and runs in two aspects – organizing and mediating. The organizing activity is a manifestation of the production function of the tourism agency through preparation and conduct of group and individual travels with a global price. The mediation activity, performed by the tourism agency is supplementary with regard to the performance of the main function. It covers two stages – "booking"- engagement with regard to the tourists, and "servicing"- implementation of engagements (Lehman, 1995, p. 43). Its performance is related to the payment of a commission fee for the cooperation received in the sales of the company product. And is an object of a number of management solutions in order to be optimized (Filipova, 2008).

A series of economic-mathematical models can be applied to the tour operator agency and its management. They have a great practical and implementation significance. The simplex method, for example, is a universal approach to solving linear optimization tasks. It is applied with regard to the solution of situations under which there is one basic solution available of a given task and it can be changed under better basic solutions in order to determine an optimum solution or to establish that there in no optimum solution.

The subject of research onto which the analysis and characteristics are aimed regardless of the chosen approach is the individual tourism company – a tour operator agency and the managerial influences exerted on it, i.e. the internally integrated set of contents, organizational forms, actions and managerial methods used and developed with regard to the business. They are mutually determined and ensure the achievement of the goal set - deducing a specific model to be applied for the improvement of the tour operator agency management for the needs of its sustainable functioning.

For the purposes of this work the specific optimization task can be formulated, as follows: there are m producers of tourism products – travel agencies (TA) and n consumers of tourism products (m, n – natural numbers), and the amounts (reserves/potential of the tourism product) are known a_1, a_2, \dots, a_m , as well as the needs for the tourism products b_1, b_2, \dots, b_n , and the costs c_{ij} ($i = 1, \dots, m, j = 1, \dots, n$) for the provision of a unit of product from the i -th tourism company up to the j -th consumer. An optimum variant is searched, so that the whole quantity of the tourism product is sold, all the needs are met at a minimum of total costs.

If x_{ij} is the quantity of the tourism product provided by the i -th producer (TA) to j -th consumer and Z is the total amount of costs for the provision (formalization according to the theoretical setting of linear algebra and linear optimization) leading to the following mathematical model:

$$\begin{aligned} & \min \{ Z = \sum_{i=1}^m \sum_{j=1}^n c_{ij} \cdot x_{ij} \} & (6) \\ & \text{minimum total price);} \\ & \sum_{j=1}^n x_{ij} = a_i, \quad i = 1, \dots, m \text{ (tourism product completely sold} \\ & \hspace{15em} \text{to the } i\text{-th producer with a total price);} \\ & \sum_{i=1}^m x_{ij} = b_j, \quad j = 1, \dots, n \\ & \text{full satisfaction of the needs of the } j\text{-th consumer);} \\ & x_{ij} \geq 0 \text{ (natural limitations for all the quantities).} \end{aligned}$$

It is convenient to provide the start data and quantities of provision (of the tourism product) in a table (matrix) form with m rows and n columns.

This way every row of the table corresponds to one TA, every column – to one consumer, and every cell – for example, cell (i, j) – to a particular direction of movement (provision) of product – from the i -th producer (TA) to the j -th consumer.

It is also possible to present the task with an orientated graph (The graph is an abstract structure representing the links between the separate elements of a particular set. Every member of this set is called a vertex, and the link between two vertices is called an edge. The names of vertex and edge originate from the most commonly used visual representation of the graph.), the vertices of which correspond to the TA (as points at which the provision of the tourism product is implemented), and the edges (arches) – to the variants of provision (communications), for example presenting a matrix and grid setting of the same task.

The grid setting allows further generalizations, as for example some of or all the points can be departure and receiving points at the same time (the tourism product can be an input to the TA (in the form of an auxiliary service, for example), as well as an output from it – again as an auxiliary service), each edge can be assigned more than one characteristics (duration, cost or traffic capacity of the site) and to be studied as diverse and important practice tasks (tasks for the shortest route or maximum flow on a grid).

In this case it is proven that equality between the total amount of the tourism product for the TA (or provided on the territory of a destination) and the total amount of consumption is a required and sufficient pre-condition for the availability of an optimum solution of the particular task:

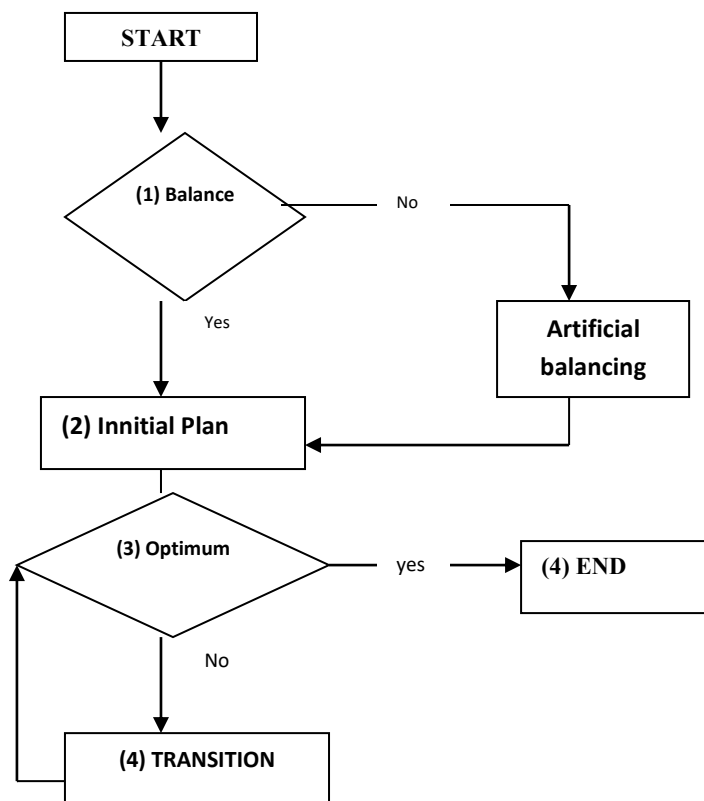
$$\sum_{i=1}^m a_i = \sum_{j=1}^n b_j \text{ (balance conditions)} \quad (7)$$

One of the most important properties of the tasks of satisfied balance condition is the case under which if a_i and b_j ($i = 1, \dots, m, j = 1, \dots, n$) are integers, there is at least one optimum solution with purposeful components.

3 Discussion

The developed task can be solved with the means of the simplex-method, but its specific structure and properties allow the application of especially adjusted modifications of the simplex methods among which the most popular is the so-called potential method (Ekimov, Nikolova, Dyukmedzhiev, 1996, pp.119-123). With regard to contents the potential method is a convergent monotone iterative method with a set of procedures (Ekimov, Nikolova, Dyukmedzhiev, 1996, pp.119-123): 1. Check of balance condition; 2. Finding the start basic

solution; 3. Optimality check; 4. Transition to an improved variant, which have the following verbal algorithmic notation – Fig. 1.



Source: the author's own work

Figure 1 Flowchart of the model

(1). If the task is not balanced it is to be balanced artificially by introducing a new dummy tourism product producer (TA) (upon lack of balance in favor of the tourism consumption), respectively a new dummy consumer (upon lack of balance in favor of production) with cost of provision of product equal to 0 (except for some special cases – upon blocked or restricted access to the tourism product). With that practically an increase of the matrix is achieved by 1 row, respectively 1 column, with production/consumption equal to:

(2). Start plan (start basic solution) can be found for example based on the so-called rule of the minimum transport cost, that can be illustrated with the following example: it is started with filling in the cells with the quantity of the smallest attendance cost in the table (or if there are several such cells with anyone of them).

If, for example, $\min(c_{ij}) = c_{kl}$, the cell (k, l) is filled in i, j

with the quantity $x_{kl} = \min(a_k, b_l)$ (this is the largest volume of tourist attendance provided in direction (k, l) and in practice it means depletion at the k -th producer of the tourism product at

$a_k \leq b_l$, respectively – satisfaction of the l -th consumer at $b_l \leq a_k$. At $x_{kl} = a_k$ the rest of the cells of the k -th row remain vacant and the row is temporarily eliminated from further filling in up to the end of procedure (1), and at $x_{kl} = b_l$ the same is done with the l -th column. On each subsequent step the cell of the minimum cost is filled in for the rest of the table with a quantity equal to the smaller of the following numbers: the remainder of the availability in the respective row and the remainder of the unsatisfied need in the respective column, after which either the row, or the column is eliminated.

The following notes (in specialists' opinion) are to be added to the explanation given. On the first place each filled in cell (incl. with zero) corresponds to the basic component, and each vacant cell – to a non-basic (vacant component) of the start basic solution. It can be degenerate or non-degenerate. According to the general theory of the sets of linear equations (Ekimov, Nikolova, Dyukmedzhiev, 1996, pp.40) the number of the filled-in cells should be equal to the grade of the matrix which is equal to $m + n - 1$. Second, upon filling in of the last cell the remainders in the respective rows and columns are always equal as a consequence from the balance condition.

And last but not least the sums of the rows and columns should be equal to the numbers on the right, respectively on the bottom of the table, which means that there should be neither a completely vacant row, nor a completely vacant column.

(3). For the check of optimality the following numbers (potentials) are defined U_i ($i = 1, \dots, m$) and V_j ($j = 1, \dots, n$) (i.e. one potential for each row and for each column) of the following correlations:

$$\bar{U}_i + V_j = C_{ij}$$

(\bar{C}_{ij} is the attendance costs for all the basic cells and only for them).

	6	9	5		
0			1		1
1	4	8	6		1
	10	7	8		1
	1	1	0		1
	1	1	1		3 = 3

Source: the author's own work

Figure 2 Illustrative example: Cell (2,1) is filled with $\min(a_2 b_1) = a_2 = b_1 = 1$.

In this case – at an intermediate simultaneous depletion of a producer and satisfaction of a consumer (the so-called situation of eating up in this type of mathematical problems that can occur upon matching between a partial amount of availabilities and a partial amount of needs) in the row of column of the filled-in cell (2,1) one more cell is to be filled in – the so-called basic zero (for example, cell (1,1)). In the rest of the table (except for row 2 and column 1) $\min(c_{ij}) = 5$ in cell (1,3), which is filled in with $\min(b_3 a_1 - 0)$. But $b_3 = a_1 - 0 = 1$, so that there is building again. A cell of row 1 or column 3, for example (3,3), is to be filled in with zero contents. In the rest of the table $\min(c_{ij}) = 7$ in cell (3,2), which is filled in with 1, with which the start plan is found. Its value is $Z_0 = 1 \cdot 5 + 1 \cdot 4 + 1 \cdot 7 = 16$.

	$V_1 = 9$	$V_2 = 7$	$V_3 = 8$		
$U_1 = -3$	6	9	5		
0			1		1
$U_2 = -5$	4	8	6		1
1					1
$U_3 = 0$	10	7	8		1
	1	1	0		1
	1	1	1		3 = 3

Source: the author's own work

Figure 3 Illustrative example

If $U_3 = 0$, then from cell (3,2) follows $U_3 + V_2 = C_{32} = 7$, from where it follows $V_2 = 7$,

From cell (3,3) $U_3 + V_3 = C_{33} = 8$ and $V_3 = 8$.

From cell (1,3) $U_1 + V_3 = C_{13} = 5$ and because of $V_3 = 8$ it follows that $U_1 = -3$.

Further $U_1 + V_1 = C_{11} = 6$, from where $V_1 = 9$ and the last basic cell (2,1) provides a link to U_2 :

$U_2 + V_1 = C_{21} = 4$, from where $U_2 = -5$.

After defining the potentials for all the vacant cells the following characteristics of optimality are formed (Author's adaptation after a development of Ekimov, Nikolova, Dyukmedzhiev, 1996):

$$Q_{ij} = U_i + V_j - C_{ij}$$

If all characteristics formed this way are non-positive ($Q_{ij} \leq 0$), the current plan is optimal (Optimality criterion with the method of potentials).

For the example we get:

$$Q_{11} = 0; Q_{12} = -5; Q_{13} = 0;$$

$$Q_{21} = 0; Q_{22} = -6; Q_{23} = -3;$$

$$Q_{31} = -1; Q_{32} = 0; Q_{33} = 0;$$

With which values the start plan is optimal and $Z_0 = Z_{min} = 16$.

In the used example the characteristics of optimality are calculated though for the basic cells they are apparently equal to 0 and therefore it makes sense to check only the vacant ones.

(4). In the event that the current plan is not optimal it is proceeded to a new one and for that purpose one of the basic cells is set vacant, and one of the vacant is filled in – the one having the greatest positive characteristics of optimality (calculated as per point (3)). It is in it where the violation of the optimality criterion is the greatest (or in one of them, if there are several such cells). In the example - where the start plan is not optimal, such a cell is (3,2), as only $Q_{32} = 1 > 0$. The so-called cycle (contour) of the cell subject to filling in is defined. It has the shape of a closed broken line (polygon), which consists only of horizontal and vertical segment lines, possibly with self-crossing, and one vertex of the cycle coincides with stated vacant cell, and all the other vertices compulsorily coincide with basic cells. The possible points of self-crossing of the cycle are not deemed vertices.

The cycle of each vacant cell is unambiguously defined and has an even number of vertices. It can miss both filled-in and vacant cells.

Conclusion

All the optimum solutions are obtained with the formula:

$$0 \ 0 \ 3 \ 0$$

$$0 \ 0 \ 3 \ 0$$

$$x_{opt} = k_1 \cdot 0 \ 0 \ 1 \ 8 + k_2 \cdot 0 \ 0 \ 3 \ 6 \quad (k_1, k_2 \geq 0, k_1 + k_2 = 1)$$

$$5 \ 5 \ 2 \ 0$$

$$5 \ 5 \ 0 \ 2$$

In the optimum (actually, the original) table of the example all the vacant cells have negative characteristics of optimality and therefore its optimum solution found above is the only one.

Similar tasks in tourism can be solved when there are transport limitations (upon blocked transport or transfers, bans); when it is necessary to attend some consumers with priority before others whose needs will remain unsatisfied; when there are limitation along the tourism chain (Stankova, 2009, chapter 4), along the supply chain or in the individual tourism site – in the communication between the representatives of tourism products/services and consumers-tourists. These tasks are deduced based on a value criterion, but tasks formulated based on time criterion can be solved, too. In their setting the service cost C_{ij} is replaced by attendance time's t_{ij} by the i -th tourism company of the j -th tourist.

The optimization model of a given system – in the case of the tour operator's agency, in fact builds up abstractly and in a simplified way the actual system. As shown the aspects chosen clarify and analyze the interrelations between the work processes, information flows, production times, costs, capacity, influencing decisively tour operators' competitiveness.

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*ENTERPRISE EVALUATION DETERMINATION BY NEURAL NETWORKS
USING OF NA EXAMPLE OF A CONCRETE COMPANY*

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Abstract

The purpose of the article is to draft the option for the use of neural networks for the prediction of future development in absolute, relative and ratiometric financial indicators necessary for the evaluation of an enterprise. The contribution demonstrates a particular application on chosen indicators of a particular company.

Methodology /methods are based on the Albertina database. It is a database of companies that offer both financial and business characteristics of companies in the Czech market. One of the methods of enterprise evaluation will be applied as an assumption. In particular, it will be the discounting of the future company profits.

The scientific aim is to determine whether artificial neural networks are suitable as tools for the assessment of given variables necessary for the calculation of enterprise value. It is necessary to choose a suitable neural structure responding to the financial and strategical analysis, or to adjust this structure based on these analyses, and subsequently state the enterprise value, where appropriate. However, the goal is not to measure the chosen method, but to open the options of prediction in a chosen indicator for the future evaluation of an enterprise.

Findings Artificial neural networks should not be considered the only universal tool for the assessment of the enterprise value, but it is suitable to use it as a chosen step towards the process of evaluation. For illustration, the MLP network 5 1:5-1-34-5:5, which is not applicable in practice, but brings a clear view of how to work with the results acquired through neural networks. The company will according to the outlined time line, report its loss from its operating activities, until 2025. Profit costs in operating activities have grown rapidly, while revenues in the same area were increasing minimally.

Conclusions The Robert Bosch s r.o. company will understandably, do everything to make the directive curve of the ordinary (or the operating) profit rise. It will then be the investments' process optimizations', active cost policy's, etc., turn. Each evaluation must be preceded in the first stage, by financial and strategic analysis. It is also suitable to identify the indicators of the inner and outer environment influencing the development of the given company, and engage them in the calculation. It is therefore possible and suitable to use the artificial neural networks as a tool for determining the chosen variables needed for the calculation of enterprise value.

Keywords: artificial neural networks, enterprise evaluation, financial statements, neurons.

JEL Classification: M15, M21

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Introduction

For enterprises to exist in the long term, they need to be able to change permanently, they need to be strong and efficient, because that is the only way for them to be competitive, which is brought about by the today's globalizing world's economics (Bötzel, Schwilling and Allen, 1999). Each organization's desire is to reach the predefined goals and successfully fulfill its tasks (Horváthová, 2013). According to Kislingerová (2005) the future means for companies, the permanent reassessment of business portfolio, products, services and technologies.

According Brealey, Myers, and Allen (2011) the value of an enterprise is actually the function of benefits generated by the company's assets, by the assets' durability, and the expected pace of future benefits' growth. The company's value is influenced by a few key indicators, one of which is the expected growth (Hendl, 2004). Another important factor is for example human resources (Horváthová, 2013). That is also confirmed by Vrchota (2013), who claims that the power of a company is not given only by its financial background, but human capital keeps gaining more and more importance as well. It is necessary to reinvest more and invest into projects that will ensure a higher capital evaluation (Synek and Kislingerová, 2015). Growth opportunities must be implemented, but also suitable, so that their duration time is the longest possible. Only in that way it is possible to reach the maximum value of a given company (Gitman, 2003).

The reason for determining the enterprise value is, according to Damodaran (2001), for example the considered change of ownership (purchase or sale of a company, fusion or partition of companies, succession proceedings), considered change of capital condition or its structure (gaining of someone else's capital – loans, subsidy, share issue), decision – making during the introduction of a company to the share-holding market, warranty (loan insurance, insurance contract entry), considered business termination, inner need of evaluation, evaluation for the purpose of taxation or the evaluation of property participation of shareholders (in case of disputes). Increase in value of a given company is the main goal of company activities, which are created during the long-term run and development (Synek and Kislingerová, 2015). The goal is therefore especially to make the company look better to the investors, which will result in an easier process of looking for the capital (Wilmowska and Krzysztozek, 2013).

1 Enterprise Value

Factors influencing the enterprise value are for example macroeconomic, microeconomic factors resulting from the company branch, risk, liquidity, also psychological factors, and the position of the company in comparison to the competition (Brealey, Myers, Allen, 2011). The value of a company is therefore influenced not only by quantitative factors (which are for example noted in accountancy), but also by non-quantifiable factors – for instance – the employee quality, management quality, research level and development (Houldsworth Jirasinghe a Mohr, 2006). The company may have the following values (Mařík, 2011):

- Brutto – value of a company as a whole (business unit), includes the value for owners as well as for creditors
- Netto – value of a company for the company owners, meaning especially the value of the capital itself. There are four basic categories of enterprise value (Mařík a Maříková, 2005):
- Market Value
- (Investment Value),
- Objectivied value
- Complex attitude based on the Cologne School.

Kuzey, Uyar and Delen (2014) focused right at the evaluation of financial and non-financial characteristics of a company (e.g. voluntary information disclosure, adoption of financial reporting standards, auditor type, ownership structure, multinationality, and corporate governance). The value of a company is influenced, as it has already been mentioned, by different financial indicators, such as: Foreign sales ration, Leverage ratio, Financial debt ratio, Sales growth rate, Asset turnover rate, Capital expenditure, Return on assets, Net profit growth rate, Net profit margin, Asset growth rate, Long-term assets ratio, Quick ratio, Cash ratio, Cash conversion cycle, Market capitalization and Market-to-book ratio. The company may, however, increase its value also through its intangible assets, i. e. superior production skills, managerial skills, marketing abilities, patents, or consumer goodwill. (Kuzey, Uyar a Delen, 2014). The fact that a company is affected by many outer and inner factors, which must be considered during the company evaluation, is confirmed by Wilmowska and Krzysztozek (2013). Each evaluated company has a different set of variables consisting of financial and non-financial factors). Enterprise tendency is to use financial factors during the value assessment, but non-financial factors are also needed, which may considerably influence the result (Chen, Wang, Lee, and Fu, 2013).

2 Values

For the assessment of enterprise evaluation many methods and procedures, which always have to be chosen with regard to the purpose of evaluation (Lie, and Lie 2002). The value assessment result has, however, thanks to the changing outer and inner conditions, a limited time validity (Luehrman, 1997). Three basic groups of methods are used. They are the property methods, revenue methods, and methods based on the capital market information may be used.

2.1 Property Methods

These longest used methods draw on the condition variables, and bring property and liabilities' condition towards the moment of estimate (Nguyen, Trawiński, and Katarzyniak, 2013). Among property methods there is the method of accountancy value and substance value. Methods accentuate the element of a generated capacity (long-term property part) and further also the organization's current assets equipment. enterprise value is then equal, in the case of financial appreciation, to the value of assets or liabilities (Kislingerová, 2005). Property methods have their significant advantages in the clarity, conclusiveness and easy check-up (Damodaran, 2001). In practice, we may however come across, according to Gitman (2003), a range of problems. For instance, in a situation when companies have property parts within their portfolio, which do not really correspond with the main work objectives (this includes recreation facilities, kindergartens, crèches, etc.). These parts must be excluded from the evaluation, which is, however, very difficult. The method of substantial value is linked with considerable labour intensity, as well as expensiveness. Leaving goodwill out is one of the shortcomings. These methods include (Mařík, 2011):

- Accounting value of own capital based on the change of historical prices,
- Disposal value
- Substantial value based on the principle of reproduction prices
- Substantial value based on the principle of cost savings
- Property appreciation based on the principle of market values

2.2 Revenue Methods

Revenue methods are based on the information of what revenue goes to the investor when they invest in the purchase of assets (Damodaran, 2001). The future revenue is then important, the revenue which is going to be transferred to the current value and can be measured in different ways. For the enterprise value estimate, methods of discounted cashflow are used (Kislingerová, 2005). Revenue methods then include (Mařík, 2011):

- Discounted cashflow method
- Capitalized clear revenue method
- Combined revenue methods
- Economic added value method

2.3 Market Methods

Work especially with the information from the area of capital market and are used especially in advanced markets (Gitman, 2003). They consist especially of market multipliers', multipliers' method, and the method of market failure (Neumaier, Neumaierová, 2002):

- Evaluation based on market capitalization
- Evaluation based on comparable markets
- Evaluation based on comparable transactions
- Evaluation based on information about companies introduced to the stock exchange.

2.4 Combined Methods

Another useful method is so-called combined method, which is possible to be constructed in different ways, based on the above-mentioned methods (Lie and Lie, 2002).

- Respectable medium value method
- Average value method
- Paying special profit method

During a subjective evaluation, the best method is the method of discounted cash flow, during the assessment of market value market methods, but also the discounted cash flow are best used, while the capitalized clear revenue method, combined revenue method, or method based on the enterprise property evaluation (Mařík, 2011), is useful.

Financial analysts face a serious problem: there are a number of models for enterprise evaluation assessment, but when applied onto the same company, they give different results (Brealy, Myers, Allen, 2011). Traditionally used methods include discounted cash flow (DCF), Economic value Added (EVA), or Modigliani and Miler models (Neumeier, Neumeierová, 2002). Accuracy in enterprise evaluation assessment is very important. These traditional attitudes share the same basic prerequisites, if used correctly and with the same inputs. Then even their results should not be different (Bötzel, Schwiling, and Allen, 1999). According to Adsera and Viñolas (2003) the FEVA model (Financial and Economic value added model) is much more exact for the enterprise evaluation assessment because it contains the advantages of all traditional attitudes, and is more complex and mathematically consistent with standard methodologies.

2.5 Artificial Neural Networks

The problem of artificial neural networks, which are able to imitate the functions of neuron systems and lively organisms' brains in a much better way than it is done by the current technologies, has been attracting the attention of many professionals as well as laics for a number of years (Šnorek, 2002). We have found that things work relatively efficiently in our world, but also in different biological systems, while nature can solve even very difficult problems. (Slavici, Mnerie and Kosutic, 2012). It is then needed to get an inspiration from it. Artificial neural networks can solve computationally very difficult problems, for which there have been no suitable methods in complex ways (Nguyen, Trawiński and Katarzyniak, 2013). Neural networks keep developing and their application is used in different branches (Zhang, 2004). Except for artificial intelligence these networks are used also in the management of processes, in natural and social science, linguistics, neuroscience, cognitive science, technology, or enterprise processes used for the prediction of bankruptcy, cost modelling, financial planning or in enterprise evaluation assessment (Ashoori and Mohammadi, 2011). Neural networks are advantageous, in comparison to traditional methods because they are able to learn from examples and after having learned they are able to capture hidden, as well as strongly non-linear relations (Ecer, 2013).

Machine learning techniques, i.e. neural network method, but also decision-making trees, may be used in solving classification problems as an alternative method to traditional statistical methods. Traditional statistical methods use restrictive assumptions such as normality, linearity and independence among predictor variables. The important point however is, that through the inclusion of back-propagation neural network into a used regression method, the accuracy enterprise value assessment model has increased (Chen, Wang, Lee, and Fu, 2013).

Kuzey, Uyar and Delen (2014) have been dealing with the impact of multinationality in different countries, that however does not have to capture up to what point the level of multinationality influences the value of a company in developing countries. Nevertheless, developing markets attract, thanks to the high potential of growth and future nowadays the attention of the whole world (Brealey, Myers, and Allen, 2011). Information on whether multinationality influences the value of a company, is important for the decision-making especially thanks to the fact that it provides managers with guides to whether and in what ways to extend the company's activities abroad, etc. Kuzey, Uyar and Delen (2014) use advanced techniques for enterprise value assessment – decision-making trees and artificial neural networks. They use multilayer perceptron structures of neural networks with one hidden layer and 18 processing elements, which is trained using the back-propagation learning method. They examine, for example, whether the acceptance of IFRS – International Financial Reporting Standards has an impact on the enterprise value.

Wilimowska and Krzysztozek (2013) use also several methods of artificial neural networks for the enterprise value assessment. Liu and Yen (2016) have developed a novel model, a growth value model, by employing the income-asset-hybrid-based approach and with the application of quantile neural networks. The model confirms the qualities of an artificial neural network again, and it bridges the disadvantages of current models for the enterprise value assessment.

Enterprise value assessment is a difficult, but needed tool valid in every company (Damodaran, 2001). For assessing this value there is a number of values, out of which each is in a way special. The method of artificial neural networks falls under the best ones and it ensures a high quality enterprise value assessment (Chen, Wang, Lee, and Fu, 2013).

3 Methodology

Data for the case study come from the Albertina database. It is a database of companies which offer both financial and business characteristics of companies in the Czech market. One of the enterprise evaluation revenue methods will be applied as the assumption. Specifically it will be the discounting of the company's future profits. This method is given by the following relation:

$$VA = \sum_{t=1}^n \frac{P_t}{(1+i)^t}$$

Where

VA stands for the enterprise value

t time in the amount of years (days, weeks, months, quarters, etc. It is however also important to adjust the other variables according to the time frequency. It is also necessary to bear in mind that the level of detail is selected according to the demanded accuracy of the calculation),

n number of years through which the evaluation calculation is done, respectively length of investments in years

P enterprise profit. Given in individual years t . For the enterprise evaluation calculation operation profit is key. Nevertheless, because of the influence of operating profit is chosen much more often (the sum of the operating profit and financial result while counting the influence of income tax).

i interest, respectively the discount rate, which helps us convert the future profits to their current value.

During the valuation we take into account primarily the main stakeholders' interests – the investors', and the capital structure. Very often we therefore choose the weighted average costs of capital as the discounted rate (if the enterprise uses both its own and foreign capital), or alternative costs of own capital or only the ratio of dividends paid and own capital (if the enterprise uses only its own capital), etc.

The goal of this text is not to assess the suitability of the chosen method. Its main idea rests in the opening of an opportunity of prediction of chosen indicators for the possibility of a future enterprise evaluation. Therefore, we understand the chosen method, up to a point, to be demonstrative, to be a presumption.

For the following analysis the Robert Bosch s.r.o. data will be used. Specifically, all profits and loss accounts (further given only as PLA), from 1997 to 2014 will be used. As the goal value, the company profit has been chosen to work in a relation to the given presumption. In this case it will be a usual profit, which may be further predicted and the enterprise value may be determined. In regard to the extent of the contribution it is desirable to aggregate the data up to a point. That is why the PLA data (operating profit, financial profit and general profit are given through the relations between them) will be used:

- Operating activities profit costs
- Income from carrying out the operations
- Achieving profit from financial activities' cost
- Financial activity revenues
- Income tax

Tab. No.1 (in the appendix) features a shortened data file. For illustration, calculation data, and individual types of profits are given.

For the calculation itself a DELL Statistica software will be used, specifically 'Neural Networks' one. Data, initially in the MS Excell format, will be imported into the Statistica program. The first line will be understood as the description of values in the columns. Further, the Intelligent Problem Solver tool will be used. Time regulations will be determined. All variables used for the calculation are coherent. Years will serve as independent variables ('items'), in which the data is available. The dependent variables, those for which we need to find time regulations, will be the following: the costs of achieving profit, operating profits, operating costs, financial profits and income tax.

The software will generate 1000 random artificial neural ones, out of which, 5 most suitable will be kept. In regard to the fact that individual years are understood to be an independent variable, we must choose this fact in a responding dialogue window. In case this mistake of every other generated network increases, it will be possible to terminate the calculation even before 1000 artificial neural structures are reached. For the calculation, the following artificial networks will be used:

- Linear

- GRNN (Generalized Regression Neural Network),
- Radial Basis Function (further RBF),
- Three Layer Perceptron,
- Four Layer Perceptron.

Numbers of neurons in hidden layers of individual networks will be dimensioned more than is advised (to avoid the risk of omitting suitable neural structures). RBF will be set for 1 to 50 neurons in a hidden layer. Three Layer Perceptron networks will use, in a hidden layer, 1 to 100 neurons. Four Layer Perceptron will be able to use, in their second and third layer always 1 to 100 hidden neurons.

Each iteration will be made of 1 to 10 steps, according to individual need. Models will distribute the results based on the linear function or the logit function. Network characteristics will be calculated only for the resulting 5 best. The others will not be taken into account.

The results will be interpreted for the whole file always divided into the training, validation and testing set of data.

4 Results

After running the analysis, five most suitable neural structures have remained for further processing. They are given in Tab. No. 2.

Table 1 Gained neural structures:

Profile	Train Perf.	Select Perf.	Test Perf.	Train Error	Select Error	Test Error	Training/ Members	Inputs	Hidden (1)	Hidden (2)
Linear 1:1-5:5	0,630021	2,537095	0,255568	0,278950	0,235895	0,397748	PI	1	0	0
MLP s5 1:5-1-34-5:5	0,571895	1,192893	0,343105	0,268161	0,183467	0,446861	BP100,CG25b	1	1	34
MLP s5 1:5-100-5:5	0,328884	0,300942	0,747984	0,252669	0,160070	0,383229	BP11b	1	100	0
RBF 1:1-1-5:5	0,776589	5,827620	0,016042	0,000004	0,000006	0,000007	KM,KN,PI	1	1	0
GRNN s2 1:2-4-6-5:5	0,632094	0,501376	0,390505	0,000004	0,000004	0,000008	SS	1	4	6

Source: Author

Further, the following data has been obtained by the analysis:

- Prediction (predicting force)
- Sensitivity analysis
- Analysis of residues
- Histograms (division) of individual variables in time
- Obtained neural networks schemes
- Response surface
- Response graphs

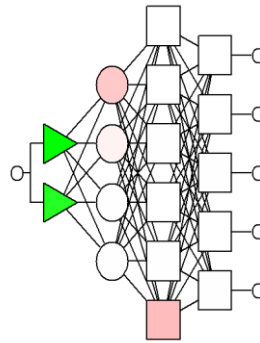
Prediction, analysis of sensitivity, and residue analysis examine the success of prediction of individual artificial neural networks. In the given example the finding of a most suitable result is, up to a point, deceptive (the term 'the best' is not used intentionally). In a way the results will be seen from the professional statistics' point of view. It will examine how much the result differs from reality as a whole. Sometimes it may, however, from the point of view of economical or financial interpretation, look nonsensical. Neural networks really behave like a human (or a living being's) brain. Sometimes an important detail is overlooked. Sometimes it misses an important detail. Sometimes it focuses in a wrong direction, just like a human being. Then a specialist turns up, who needs to do the last step (and not only that) and determine which result makes sense, and which does not. Prediction, analysis of sensitivity and analysis of residues then has a supporting character.

Histograms help us determine how much the data basis is or is not complete and how to look at the obtained results.

Schemes of obtained neural networks are very interesting. They help us clear out the relations of input and output variables, and the difficulty of calculation in the form of hidden layers. This output is completed by the

kept neural networks in the form of XML files (useful also in MS Excel programme, and we can test vector one after another). The GRNN s2 1:2-4-6-5:5 network is given as an example in Figure 1.

Train Perf. = 0,632094 , Select Perf. = 0,501376 , Test Perf. = 0,390505



Source: Author

Figure 1 Scheme of Generalised Regression Neural Network GRNN s2 1:2-4-6-5:5

The entry proves that the network uses one input variable. On the contrary, there are five output variables (e.i. given by the number of variables that we guess). These variables are given in the scheme in the form of small circles. Other units among them are neurons (according to their identification either in the form of triangles, bigger circles, and squares).

Response surface and Response graph offer us a different point of view at the same information. They present a view at the series course of already well-known variables, and they predict their course during the future years. For illustration, the course of operations income is given.



Source: Author

Figure 2 The Course of Operations Income 1997 – 2050

The picture gives a predicted course of operating income (especially revenue for the sold products) in 1997 to 2050. Networks 1 – 5 respond to their order in networks given in the table. The guidelines of individual curves generated by artificial neural structures are clearly visible in the graph. The predicted period seems to be too long. It could be shorter. However, it depends on the will of the shareholder to hold the share (respectively the period of its holding). The figure displays all the best results. We shall discuss the results and face them with the reality and express their economic meaning. At the first glance results no. 1, 4 and 5 seem to be unusable.

Table no. 3 offers the Response surface of the MLP s5 1:5-1-34-5:5 network, i.e. Four Layer Perceptron. It basically expresses the contents of Response graph in numbers.

Table 2 Response surface for obtained variables during 2016 – 2025

Item (year)	Operating profit	Revenues (operating profit)	Costs (operating profit)	Financial profit	Revenues (financial profit)	Costs (financial profit)	Common profit	Costs (common profit)
2016	-11 997	14 020 850	14 032 847	-52 532	124 894	177 426	-127 338	62 809
2017	-19 864	14 044 231	14 064 095	-52 961	124 042	177 003	-135 552	62 727
2018	-25 806	14 064 518	14 090 324	-53 334	123 306	176 640	-141 796	62 655
2019	-30 304	14 082 128	14 112 432	-53 659	122 669	176 327	-146 555	62 592
2020	-33 715	14 097 420	14 131 135	-53 941	122 117	176 058	-150 193	62 537
2021	-36 306	14 110 706	14 147 012	-54 187	121 638	175 825	-152 981	62 488
2022	-38 279	14 122 251	14 160 530	-54 401	121 224	175 624	-155 126	62 446
2023	-39 785	14 132 288	14 172 073	-54 587	120 864	175 451	-156 780	62 408
2024	-40 936	14 141 016	14 181 952	-54 749	120 551	175 300	-158 061	62 376
2025	-41 821	14 148 606	14 190 427	-54 890	120 280	175 170	-159 058	62 347

Source: Author

5 Discussion

5.1 Theoretical contribution

With regard to the article's goal it is not needed to give the whole range of the data obtained for 1997 to 2050. It is not needed to give the results of the rest of last four best results. But the interpretation of the obtained result seems to be key. That is why the MLP s5 1:5-1-34-5:5 network has been chosen for its clarity, because it is not applicable in practice. On the other hand it is a clear example of how to work with the results obtained through neural networks. The enterprise will, according to the outlined timeline produce loss until 2025. Specifically costs of making a profit in operating activities have risen at a high pace. Compared to that, costs in the same category were rising minimally. Movements in the financial storey of profit are not significant. Similarly profit tax is not significant. It is important to bear in mind that this article works with accounting profit or with loss, not with the base for tax liability calculation. That is why the total loss is mentioned, as well as the minimal decrease in tax liability at the same time. Applying neural networks in the form suggested by this article, while applying the statistical calculation of time lines etc., we assume the previous results of an enterprise and we assume that based on them we will be able to predict their future development.

5.2 Practical contribution

Nevertheless, such a tool is available to the management of Robert Bosch s.r.o. company. Therefore they know the curve of the future development of the company results in case it would not interfere. That is, however, not the main option of the company, and therefore not of its management. Logically, they will do the utmost for the directive curve (of general or at least operating profit) to rise. Investments, process optimizations, active mood policy, etc., will take their turns. So we gradually reach the fact that each enterprise evaluation must be preceded by financial analysis in the first place, and subsequently by strategical analysis.

Financial analysis will evaluate the current state of enterprise health, meaning whether it is or is not in a good financial condition. Strategical analysis not only evaluates the current enterprise state in the form of financial and non-financial indicators, but it helps the enterprise determine its future potential, and subsequently the options for determining such potential.

Conclusion

The following clearly results from the text (generalized):

- 1 Artificial neural networks are possible and suitable to serve as tools for determining the chosen variables necessary for the enterprise evaluation calculation (that may be for the calculation of profit, cash flow, their partial variables, or individual items of a balance sheet).
- 2 Neural networks should not be considered the only universal tool for determining the enterprise value. They are suitable to be used as the chosen step towards the evaluation process. In the first step financial analysis should be carried out, and the strategic analysis subsequently. Further on the calculation of timeline of chosen indicators through neural networks should follow. Further on, it is necessary to choose the suitable neural structure responding to the financial and strategic analysis, or to adjust this structure, based on the financial and strategic analysis. Towards the end it is suitable to approach towards the enterprise evaluation determination itself.
- 3 It is suitable to identify the indicators of inner and outer environment that influences the enterprise development, and to involve them into the future enterprise profits calculation (possible GDP, inflation, tax burden, etc.)

Acknowledgment

The goal of this article was to outline the possible use of neural networks for predicting future development of indicators (absolute, relative and ratiometric) necessary for enterprise evaluation. The article's goal has been fulfilled.

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Appendix

Table3 Input data for analysis:

Item (year)	Operating profit	Revenues (operating profit)	Costs (operating profit)	Financial profit	Revenues (financial profit)	Costs (financial profit)	Common profit	Costs (common profit)
1997	205 345	2 634 816	2 429 471	-59383	141 488	200 871	62 534	83 428
1998	288 081	4 224 338	3 936 257	-87454	378 804	466 258	117 626	83 001
1999	434 650	5 607 604	5 172 954	-59657	140 549	200 206	243 892	131 101
2000	371 804	6 281 143	5 909 339	-73197	79 928	153 125	190 601	108 006
2001	310 988	6 413 207	6 102 219	-27751	114 535	142 286	197 556	85 681
2002	385 570	6 925 933	6 540 363	-3403	210 274	213 677	269 312	112 855
2003	1 124 952	9 661 931	8 536 979	-6196	95 892	102 088	797 655	321 101
2004	903 384	10 448 763	9 545 379	-38451	128 999	167 450	621 260	243 673
2005	482 494	9 253 927	8 771 433	-24441	123 454	147 895	338 106	119 947
2006	705 894	9 086 944	8 381 050	-31087	91 240	122 327	499 669	175 138
2007	1 197 954	9 820 000	8 622 046	-1762	206 241	208 003	939 997	256 195
2008	524 037	8 367 411	7 843 374	-171182	254 921	426 103	276 660	76 195
2009	22 996	8 091 521	8 068 525	-19999	390 455	410 454	-1 883	4 880
2010	222 789	8 784 821	8 562 032	25973	243 631	217 658	199 323	49 439
2011	295 434	10 049 869	9 754 435	-60243	225 437	285 680	187 205	47 986
2012	275 673	10 277 910	10 002 237	7000	257 723	250 723	225 515	57 158
2013	286 174	12 033 151	11 746 977	-216116	296 227	512 343	50 397	19 661
2014	367 026	14 999 568	14 632 542	-97138	59 649	156 787	227 786	42 102

Source: Database Albertina

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