

“Perspectives of Business and Entrepreneurship Development”



Economic, Management, Finance and System Engineering from the Academic and Practitioners Views

PROCEEDING OF SELECTED PAPERS



PREFACE

It is the honour for us to edit the Proceedings of selected papers presented in the 15th International Scientific Conference Perspectives of Business and Entrepreneurship Development: Economic, Management, Finance and System Engineering from the Academic and Practitioners Views, held on May 28-29, 2015, Brno, Czech Republic.

The Faculty of Business and Management, Brno University of Technology highly promotes international research cooperation. The regular Scientific International Conference offers an opportunity for academics to present their research works. The primary goal of the 15th International Scientific Conference was to provide a unique platform to facilitate the exchange of leading ideas among academics and practitioners in the field for effective advancement of knowledge in the field of economic, management, finance and system engineering from the perspective of challenges to business and entrepreneurship. This was achieved through multidisciplinary presentations and discussions of current problems and conditions of business and entrepreneurship in the Europe and the World. 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 Program Committee of Scientific Conference assessed totally 100 submissions of international authors affiliated with universities in 17 countries, which confirms a long-lasting international recognition of the Conference. A total of 100 papers and abstracts has been peer reviewed by the renowned team of reviewers.

As the editors of this Proceeding, we are glad to see variety papers focusing on the perspectives of business and entrepreneurship development. Out of 100 submissions, 69 papers (acceptance rate 69%) have qualified for the approval of the Scientific Program Committee and for presentation at the Conference scientific sessions and 43 high quality research papers (selection rate 62%) have been selected to the Proceeding of selected papers.

Special thanks are to all our international partners, representatives of the companies, reviewers, the members of international scientific program committee and all members of organisational committee. We would like to thank all who contributed in every process to make this Proceeding actualized.

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ABOUT CONFERENCE

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The primary goal of the conference is to provide a unique platform to facilitate the exchange of leading ideas among academics and practitioners in the field for effective advancement of knowledge in the field of economic, management, finance and system engineering from the perspective of challenges to business and entrepreneurs. This will be achieved through multidisciplinary presentations and discussions of current problems and conditions of business and entrepreneurs in the Europe and the World. Major highlights of the conference would be creating of the platform for network and communication with distinguished entrepreneurs, managers and traders. Doing Business in the Czech Republic - presentations by business persons. We welcome the submission of manuscripts that address the conference theme as well as all functional areas of business administration and entrepreneurship. (information for the authors see on conference website).

This conference will feature competitive papers, plenary session, poster and panel sessions. Submissions will be subjected to a double-blind review process and will be published in the refereed Conference proceedings „Selected papers: Perspectives of Business and Entrepreneurship Development: Economic, Management, Finance and System Engineering from the Academic and Practitioners Views“ which will be applied for covering by abstracting/indexing services: Thomson Reuters Conference Proceedings Citation Index (ISI).

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The significance of intra-industry trade in development of Lithuanian international trade

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Abstract

Purpose of the article The significance of intra-industry trade lies in the fact that intra-industry trade is an important and constantly growing modern international sector. It has an importance to the changes of economics, export and import structure of separate countries. Today, this is one of the reasons for attention to this form of trade of many researchers. The contribution of the article consists in identification the influence of the economic crisis and Russian embargo on the changes of nature and pattern of Lithuanian international trade and intra-industry trade development.

Methodology/methods In order to examine the significance of intra-industry trade in Lithuanian international trade development two approaches are adopted. The Grubel-Lloyd index was used to calculate the intensity of intra-industry trade and thus to determine its relative importance compared to inter-industry trade. Secondly, the index of marginal intra-industry trade was used to examine changes in trade flows over time.

Scientific aim The aim of this article is to estimate the significance of intra-industry trade in Lithuanian international trade development under existing conditions.

Findings On the basis of standard international trade classification (SITC), Grubel-Lloyd and marginal intra-industry trade indices were established the significance of intra-industry trade in the development of trade structure between Lithuania and the EU. It was found that trading in food, drink, tobacco, raw materials, machines and means of transport, chemical products, and other manufactured goods dominate between Lithuania and the EU.

Conclusions It was determined that Lithuanian intra-industry trade is the most important and constantly increasing sector of international trade. The research shows that huge differences in separate groups of goods prevail in Lithuanian intra-industry trade and nature and pattern of Lithuanian international trade are changing.

Keywords: intra-industry trade, Grubel-Lloyd index, index of intra-industry trade, marginal intra-industry index, international trade.

JEL Classification: F1, F11, F14.

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Introduction

Lithuanian integration into the EU opened huge possibilities for Lithuanian foreign trade. It was determined that in recent years export of Lithuanian goods into EU countries and import from EU comprised the biggest share of all export and import.

A large part of trade consists of intra-industry trade, defined as the exchange of broadly similar goods. Intra-industry trade has risen rapidly in the past three decades and now accounts for more than half of all trade manufactures among the industrial countries. Current economic integration process expanded the boundaries of the European Union thus influencing tendencies of changes of intra-industry trade.

Although the intra-industry trade is wide-spread, economic literature has numerous discussions regarding significance thereof. While analyzing the significance of this trade it is necessary to measure the part of intra-industry trade in the international trade. This is particularly important for Lithuania due to the lack of researches in this field. The following are the dominating approaches of measurement of importance of intra-industry trade: the Balassa index, Grubel-Lloyd index, the Aquino formula, the Bergstrand method etc (Balassa, 1966; Grubel, Lloyd, 1975; Aquino, 1978; Bergstrand, 1990). All these approaches used have both advantages and disadvantages however, the problem they face while assessing the index of intra-industry trade is that of provision of data. Usually the standard international trade classification (SITC) is used, yet there exist doubts regarding subjection of certain goods to the same branch or other branches (Volgina, 2006). This study is used SITC for assessing the significance of intra-industry trade in Lithuanian international trade development.

The purpose of this research is to estimate the significance of intra-industry trade in Lithuanian international trade development under existing conditions. Lithuanian integration into EU had an influence on the changes of intra-industry trade between Lithuania and the members of EU. Researches show that the economic crisis and Russian embargo have a significant influence on the changes of nature and pattern of Lithuanian international trade and intra-industry trade development. At the same time, researches investigating such changes are missing. For this reason the actual problem arises – what criteria should be used when assessing the significance of intra-industry trade in Lithuanian international trade development.

This article aims to present the results of the significance of intra-industry trade in the development of trade structure between Lithuania and the EU. A review of the basic literature is provided at the beginning of the article. Then the article describes the methodology for examining the significance of intra-industry trade in Lithuanian international trade development. Results and discussion parts outline the main directions of nature and pattern of Lithuanian international trade and intra-industry trade development.

1 Literature review

International trade has grown rapidly in the past three decades in value and volume and the composition of trade has altered significantly. A large part of trade consists of intra-industry trade and this form of trade has risen rapidly. Intra-industry trade today accounts for more than half of all trade manufactures among the industrial countries. Increasing part of intra-industry trade in the volume of global trade is of importance to the changes of economy of separate countries. The scale of such having trade increased the volumes of production, export and import in various sectors of economy of such countries change. This leads to changing nature of international trade and its structure of goods. This is one of the reasons of an extensive attention to this form of trade in the economic literature.

Many researches indicate that more developed countries and more specialized trade structure lead to higher intra-industry trade (Kalbasi, 2003; Tiits and Juriado, 2006; McAleese, 2004). Most of studies show that industries with high levels of intra-industry trade undergo less structural change – and less adjustment costs – in response to trade liberalization than industries with low levels of intra-industry trade. The reason for this is that it is easier to transfer and adapt resources within firms or industries than from one industry to another (Krugman, 1981; McAleese, 2004). At present, empirical studies of intra-industry trade between separate countries and its groups have become the subject of many researchers.

The reasons of intra-industry trade, and its implications for structural adjustment and the gains from trade, have been the subject of much study. Traditional approaches to international trade and specialization, such as David Ricardo's theory on relative comparative advantage and Hecksher-Ohlin theory of ratio of production can not provide a proper understanding of intra-industry trade. The theory of comparative advantage deals with all the reasons of international trade that are generated by the differences between the countries. D. Ricardo's contribution is not related to his note that all countries are different, but, rather, to the fact that these differences help all countries gain an international advantage even if they have higher wages (developed countries) or lower productivity (developing countries) if compared to neighboring countries. D. Ricardo's idea of trade model was to show that each country can gain an advantage due to certain differences among countries. Anyway, whether a country has higher wages or another – lower productivity, competitive wage rates that prevail in a country ensure that every country will specialize in the good having a comparative advantage. In Heck-

sher-Ohlin model country exports goods, production of which consumes more relatively abundant resources of that country, and imports the goods, production of which consumes more relatively scarce resources of that country (Husted and Melvin, 2013).

Thus, the said theories analyzed the trade between countries using differences in resources and availability of production, using there of. However, intra-industry trade fails to reflect the comparative advantage. Following these models, one would expect that trade only appears between countries characterized by different factor endowments. Nevertheless, majority of global trade is conducted between the developed countries having similar economic structures and factor endowments. According to alternative theories, monopolistic competition and economies of scale encourage intra-industry between similar countries with equal possibilities, consumer tastes and priorities because it provides additional motivation for specialization of production. Effect of economies of scale helps to explain the trade in similar goods the comparative part of which in the total volume of trade is big enough and still has the tendency of growth (Volgina, 2006).

Kevin Lancaster and Paul Krugman present that intra-industry trade expansion is a result of product differentiation in markets with monopolistic competition and increasing returns to scale (Lancaster, 1980; Krugman 1980). In the opinion of these authors, trade in differentiated products is most likely to take place between countries with similar factor endowments and which have a high level of per inhabitant income.

Elhanan Helpman and Paul Krugman synthesize traditional and new international trade theories in a framework that incorporate together differences in factor endowments, decreasing costs and horizontal product differentiation, in order to explain both intra-industry and inter-industry trade (Helpman, 1981; Krugman, 1980).

Thus, the said models fail to provide sufficient understanding of intra-industry trade. Therefore, a new approach to intra-industry trade was provided. According to this approach intra-industry trade is distributed in two kinds – horizontal and vertical. Horizontal intra-industry trade was explained by economies of scale in the presence of product differentiation and monopolistic competition. Horizontal intra-industry trade increases when produced goods are similar in quality and thus the trade is conducted between similar countries (Lancaster, 1980; Krugman 1980; Bergstrand 1990). Vertical intra-industry trade is explained as simultaneous export and import of products, which are different by quality (Falvey and Kierzkowski, 1981; Falm and Helpman, 1987). They indicated that the share of vertical intra-industry trade increases in an environment where many big firms settle and produce numerous varieties.

Diaz Mora, Sylvie Montout, Jean-Louis Mucchielli and Soledad Zignago established that international and interregional trade increase the size of the market because of bigger variety of goods, therefore, the possibility to gain benefit from economy of production volume is increased. They indicated that the products may only differ in their quality (this is the reason for difference of price). In this case specialization is grounded on the changes of quality within the same branch. Thus they indicate the importance of intra-industry trade (Mora, 2002; Montout, Mucchielli and Zignago, 2002).

Takamune Fuji analyzed the importance of intra-industry trade for Japan, vertical and horizontal forms of this trade by using econometric models (Fuji, 2006).

In order to understand the significance of intra-industry trade author analyzes the problem of its measurement.

2 Methodology

The aim of this article is to assess the significance of intra-industry trade in Lithuanian international trade development. Analysis shows that various methods are used to estimate the significance of intra-industry trade. The first works on this matter were presented by Bela Balassa in 1966. He indicated that intra-industry trade can be measured by value when comparing exports of a given good with import thereof (Balassa, 1966). Early works on intra-industry trade measurement included its degrees and the pattern of trade (Aquino, 1978; Greenaway and Milner, 1986).

The index most often used to evaluate the significance of intra-industry trade was presented by Grubel and Lloyd (Grubel and Lloyd, 1975). Author uses the traditional measure of intra-industry and the Grubel-Lloyd index calculated as:

$$GL_i = 1 - [|X_i - M_i| / (X_i + M_i)], \quad (1)$$

Whereas:

X_i – export in a certain line of goods;

M_i – import in the same commodity group.

The value of GL_i index ranges from 0 to 1. Thus the closer the GL_i value is to 1, the more significant is intra-industry trade and vice versa. If X_i or M_i equal to 0, there is no intra-industry trade, and this index equals 0 because the country is only exporting or importing the products of a given branch. When $GL_i = 1$, two-sided trade is conducted: the country exports as much as it imports. In other words, the closer the value of GL_i is to 1 the larger the volume of intra-industry trade is (Grubel and Lloyd, 1975).

In connection with circumstance that Grubel-Lloyd index is widespread and used for the analysis of significance of intra-industry trade in separate countries, it will be used in this paper to analyze the nature and changes of this kind of trade between Lithuania and the EU.

The limitations of using changes in the standard Grubel-Lloyd index to capture the dynamics of changes in intra-industry trade are widely recognized. In economic literature was noticed that Grubel-Lloyd index, as measure of intra-industry trade, is negatively correlated with factor market adjustment costs. But adjustment costs are dynamic phenomena and the static Grubel-Lloyd index is not suitable measure in this instance. Consequently, recent theoretical developments stress the importance of marginal intra-industry trade in the context of the adjustment costs of trade liberalization.

Several indices of marginal intra-industry trade have been developed. The first works on this matter were presented by Chris Hamilton and George Kniest in 1991. They noticed that Grubel-Lloyd index is not appropriate in explaining changes in trade flows over time. In view of these authors, for the purpose of evaluating the adjustment consequences of trade expansion it was important to focus on how intra-industry trade changes at the margin. Chris Hamilton and George Kniest offered an index which effectively calculated the proportion of the changes in exports or imports (Hamilton and Kniest, 1991). The most popular measured of intra-industry trade was proposed by Marius Brulhart (1994), which is calculated as:

$$A = 1 - [(\Delta X_i - \Delta M_i) / (\Delta X_i + \Delta M_i)], \quad (1)$$

Whereas:

X_i – export in a certain line of goods;

M_i – import in the same commodity group;

Δ – change in trade flows between two years.

Like the GL_i index, the A index varies between 0 and 1. The A index is determined in all cases, can be aggregated over a number of product groups using appropriate weights and indeed shares many the familiar statistical properties of the Grubel-Lloyd index. When a country's exports and imports in a particular industry grow or shrink at a similar absolute rate (high A), trade-induced adjustment is likely to occur at the intra-industry level, while the overall performance of the industry is determined by factors which tend to affect all countries symmetrically, such as global demand or technology changes. Conversely, where a country's exports and imports in a particular industry show diverging trends (low A), both the trade-induced asymmetrical forces for the geographical inter-industry adjustment and exogenous factors determining the fate of the industry across all countries are likely to be relevant (Brulhart, 1994). Author uses an index of marginal intra-industry trade for examining the changes in trade over time.

3 Results

Intra-industry trade between Lithuania and its main partners is calculated using Grubel-Lloyd index and SITC (Table 1). Table 1 presents the intensity of intra-industry trade between Lithuania and the EU countries over the period from 2008 to 2014. Trading partners have been selected by the largest part of export and import in Lithuanian total exports.

The analysis of intra-industry trade between Lithuania and the EU shows that the value of GL_i index is close to 1 (Table 1). This is related to the fact that the EU is the main Lithuanian trading partner: share of export of goods to the EU in the total export during 2008–2014 were the largest. This was also characteristic to the import from EU. In 2014 export of Lithuanian goods to the EU comprised 54.95 % of total export and import from the EU –63.8% of total import (Foreign trade, 2015). A high level of intra-industry trade is usually attributed to a number of country specific factors, including its close geographical proximity, similar level of development, similar consumer tastes, culture, institutional, political and transport links.

The highest indices of intra-industry trade during the period 2008-2014 are found in Lithuanian trade with Latvia, Netherlands, Sweden and France. The lowest these indices are found in 2008 and in 2009. It is connected with economic crisis in all countries of the EU.

Table 1 Intra-industry trade between Lithuania and main partners in 2008-2014, %

Countries	Year						
	2008	2009	2010	2011	2012	2013	2014
EU	0.89	0.99	0.98	0.99	0.99	0.98	0.99
Latvia	0.74	0.83	0.87	0.84	0.82	0.84	0.90
Poland	0.61	0.79	0.87	0.81	0.72	0.76	0.89
Germany	0.63	0.87	0.91	0.92	0.92	0.85	0.86
Netherlands	0.85	0.94	0.95	0.95	0.99	0.98	0.93
Estonia	0.80	0.59	0.78	0.64	0.59	0.60	0.60
United Kingdom	0.70	0.59	0.54	0.59	0.56	0.58	0.63
Sweden	0.83	0.81	0.88	0.98	0.96	0.98	0.98
France	0.88	0.83	0.94	0.80	0.89	0.88	0.93
Denmark	0.75	0.71	0.78	0.93	0.91	0.93	0.83

Source: Author's calculation, Eurostat, 2015

The analysis of intra-industry trade between Lithuania and the EU according to SITC shows that dominate huge differences in separate groups of goods (Table 2).

Table 2 Intra-industry trade by SITC between Lithuania and the EU in 2008-2014, %

SITC	Year						
	2008	2009	2010	2011	2012	2013	2014
Food, drink, tobacco (SITC 0+1)	0.82	0.91	0.87	0.98	0.99	0.85	0.91
Raw materials (SITC 2+4)	0.83	0.80	0.76	0.79	0.72	0.81	0.95
Mineral fuels, lubricants and related materials (SITC 3)	0.08	0.24	0.20	0.24	0.27	0.24	0.34
Chemicals and related products (SITC 5)	0.86	0.82	0.82	0.88	0.88	0.86	0.90
Machinery and transport equipment (SITC 7)	0.41	0.62	0.56	0.47	0.45	0.45	0.55
Other manufactured goods (SITC 6+8)	0.84	0.97	0.97	0.95	0.95	0.92	0.91

Source: Author's calculation, Eurostat, 2015

Data of Table 2 reveal that trading in food products, drinks, tobacco, other manufactured goods, raw materials, chemicals and related products prevail between Lithuania and the EU because trading indices of these branches are the largest. This shows the nature of specialization of international trade. Data of Table 2 show that Lithuanian trading with the EU in food products, drinks, tobacco, other manufactured goods, chemicals and related products and raw materials during 2014 not only increased if compared to 2008 but over the period 2008-2014 were the largest. Such situation was determined by many reasons, mainly, abolition of customs taxes for these products from the EU States. This reduced the prices of these products, increased consumption and import thereof. On the other hand, during the examined period of time from 2008 to 2014 export of the mentioned goods increased (Eurostat Comext database, 2015). Thus, the changes of GLi index show not only the increased level of specialization of Lithuanian products but also the ability of manufacturers to compete under more open trading conditions when Lithuania became the member of the EU.

The Grubel-Lloyd indices in Table 1 and Table 2 indicate a slightly upward trend in intra-industry trade. However, the Grubel-Lloyd index is most appropriate for measurement over a single period of time, i.e. is regarded as static indicator of intra-industry trade. The analysis has so far been based on indices which measure the extent of intra-industry trade as a proportion of total trade at a given point of time. But changes in the Grubel-Lloyd index may not capture potential adjustment costs, and measures of marginal intra-industry trade can, therefore, be used to complement traditional intra-industry trade analysis.

Therefore, in this study are calculated marginal intra-industry trade indices between Lithuania and its main trading partners over the periods 2008-2011 and 2011-2014 based on multilateral trade flows at specified group's level (Table 3).

Table 3 Marginal intra-industry trade between Lithuania and main partners in 2008-2014, %

Countries	Year	
	2008-2011	2011-2014
EU	0.74	0.88
Latvia	0.64	0.72
Poland	0.45	0.84
Germany	0.48	0.60
Netherlands	0.74	0.89
Estonia	0.34	0.55
United Kingdom	0.47	0.59
Sweden	0.70	0.73
France	0.80	0.87
Denmark	0.50	0.82

Source: Author's calculation, Eurostat, 2015

The highest share of marginal intra-industry trade is indicated for Latvia, Netherlands, France, Sweden and the EU during both periods. The lowest share of marginal intra-industry trade is revealed for Estonia and United Kingdom over both periods (Table 3).

Using an index of marginal intra-industry trade and SITC is examined the changes in trade over time between Lithuania and the EU (Table 4).

Table 4 Marginal intra-industry trade by SITC between Lithuania and the EU in 2008-2014, %

SITC	Year	
	2008-2011	2011-2014
Food, drink, tobacco (SITC 0+1)	0.78	0.86
Raw materials (SITC 2+4)	0.65	0.91
Mineral fuels, lubricants and related materials (SITC 3)	0.20	0.35
Chemicals and related products (SITC 5)	0.61	0.74
Machinery and transport equipment (SITC 7)	0.30	0.85
Other manufactured goods (SITC 6+8)	0.40	0.84

Source: Author's calculation, Eurostat, 2015

Data of Table 4 show that marginal intra-industry trade indices of food, drink, tobacco and raw materials are the largest over both periods. The lowest level of marginal intra-industry trade between Lithuania and the EU is found for mineral fuels, lubricants and related materials during 2008-2011 the period. These calculation results show that inter-industry in these commodities groups prevail between Lithuania and the EU. As we can see marginal intra-industry trade indices over the period 2008-2011 are the lower if compared with the period 2011-2014. Research shows that this is related with the economic crisis.

Thus, the analysis of intra-industry trade shows that after Lithuanian becoming the member structural changes of Lithuanian economy and trade take place. Lithuania trade with numerous foreign countries in a free trade regime influences the increase in the volumes of import and export. This is also characteristic to the examined members of EU. Due to that the share of intra-industry trade and its importance has increased. Due to that the share of intra-industry trade importance thereof has increased. Therefore, the nature and pattern of Lithuanian international trade is changing.

4 Discussion

The paper analyses the significance of intra-industry trade in development of Lithuanian international trade. The globalization and integration processes and the global financial and economic crisis are having a major impact on Lithuanian international trade development. However, researches investigating such changes are missing.

Therefore, to evaluate the significance of intra-industry trade in Lithuanian international trade development under existing conditions is actual and important problem.

The analysis of the basic theories of intra-industry trade shows that traditional theories can not provide a proper understanding of intra-industry trade. These theories analyzed the trade between countries using differences in resources and availability of production factors, using thereof. Today, majority of global trade is conducted between the developed countries having similar economic structures and factor endowments. Therefore, a new approach to intra-industry trade was provided. According to alternative theories, monopolistic competition and economies of scale encourage intra-industry between similar countries with equal possibilities, consumer tastes and priorities because it provides additional motivation for specialization of production.

In order to estimate the significance of intra-industry trade in Lithuanian international trade development under existing conditions it were examined the methods of assessment of intra-industry trade and on these grounds were selected the best of their. The research indicates that the most appropriate method for measuring the significance of this form of trade is Grubel-Lloyd index. This index as an indicator of the degree of industrial specification is used for analysis of nature and changes of intra-industry trade between Lithuania and the EU. However, the Grubel-Lloyd index is most appropriate for measurement over a single period of time and changes in the Grubel-Lloyd index may not capture potential adjustment costs. Therefore, marginal intra-industry trade index was used to examine changes in trade flows over time.

Findings of the survey showed that intra-industry trade provides more additional benefits from international trade than comparative advantage because intra-industry trade enables the countries to gain benefit from larger markets. By manufacturing a small number of kinds of goods useful for consumers the country can produce bigger volumes of each kind with lesser costs and higher productivity of labor. At the same time the consumers gain benefits from increasing range of choice. Thus, the nature of international trade is changing as well as its structure of goods due to increasing specialization within a branch and the variety of produced goods increases.

Conclusion

Lithuanian integration into the EU opened huge possibilities for Lithuanian foreign trade. It was determined that in recent years export of Lithuanian goods into EU countries and import from EU comprised the biggest share of all export and import. Lithuanian integration into EU had an influence on the changes of intra-industry trade between Lithuania and the members of EU.

The analysis of intra-industry trade between Lithuania and EU shows that the value of GL_i index is close to 1. This is related to the fact that EU is the main Lithuanian trading partner: share of export to EU in the total export during 2008-2011 was the largest. This was also characteristic to the import from EU.

It was determined concentration of intra-industry trade flows to the groups of countries. Analysis shows that growth tendency of intra-industry trade is characteristic between Lithuania and Latvia, Poland, Germany, Sweden, France and Netherlands and tendency of reduction with Estonia and United Kingdom. Analysis shows that an influence on Lithuanian intra-industry trade with analyzing countries had the economic crisis. However intra-industry trade of all examined countries with EU is predominant if compares to inter-industry trade. This is related to the fact that all examined countries are of similar economic development, capital-labour ratio, qualification level. On the basis of standard international trade classification (SITC) are determined that Lithuanian intra-industry trade is the most important and constantly increasing sector of international trade. The research showed that huge differences in separate groups of goods prevail in intra-industry trade between Lithuania and the EU. It was found that trading in food products, drinks, tobacco, other manufactured goods, raw materials, chemicals and related products dominate between Lithuania and the EU. This shows the nature of specialization of international trade.

On the basis of marginal intra-industry trade calculation is determined that the highest share is indicated for Latvia, Netherlands, France, Sweden and the EU during 2008-2011 and 2011-2014 periods. The lowest share of marginal intra-industry trade is revealed for Estonia and United Kingdom over both periods. It was determined marginal intra-industry indices by SITC between Lithuania and the EU. These calculation results show that Lithuania has advantages in food products, drinks, tobacco and raw materials for the period 2008-2011 and for the period 2011-2014 the highest levels of this index are for chemicals and related products; food products, drinks, tobacco, raw materials and other manufactured goods. These calculation results indicate the main directions of nature and pattern of intra-industry trade development between Lithuania and the EU.

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Development of a Country's Economy as a Factor for Business Enlargement

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Abstract

Purpose of the article The aim of this paper is to analyze the economic changes and contemporary issues in the economy of Lithuania and the Czech Republic in the period of 2005-2013. The research characterizes the changes of economic development and the aspiration to seek sustainability of the economic development and inclusive growth as a precondition for business development. In the article the development of business is characterized by global competitiveness index and ease doing business index.

Methodology/methods Economic development index is evaluated in order to examine the changes of economic development. Preconditions for business development are characterized based on the index of economic development. The empirical study was based on data given by the World Bank. For the evaluation of economic development indicators in these countries in the analyzed period of 2005-2013 year 2005 was chosen as base year.

Scientific aim To analyze the development of the country's economy as a precondition for business development and compare economic development among Lithuania, the Czech Republic and to characterize the development of business in the context of the European Union (EU) Member States and the European Union euro area (EUea) in the period of 2005-2013.

Findings Economic development is always associated with structural changes, economic fluctuations, and economic modernization, which are described by the dynamics of the main macroeconomic indicators, including business development.

Conclusions In the future the main problems for Lithuanian economic development are industry policy, research&development (R&D) expenditure. Although Lithuania is on the list of thirty countries, that have the most favorable business environment, its macroeconomic indicators are not better than the macroeconomic indicators of the Czech Republic. The macroeconomic indicators of the Czech Republic are significantly higher, but its business environment indexes are lower.

Keywords: economic development, economic development index, business, business development, preconditions for business development

JEL Classification: M10, M21, O1

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Introduction

The indicators of economic development are analysed seeking to determine the most important development areas of a country in which it is crucial to take means to develop sustainable growth and raise competitiveness. The EU strategy "Europe 2020" revealed main economic policy directions and specific guidelines for each EU member, including Lithuania.

Lithuania, like the other European Union Member States (EU), while seeking smart, sustainable and inclusive growth, accepts new challenges, related to the development of a country's economy and returning the citizens of Europe to the labour market. This process is done successfully could revive Europe's economy. The economic development in Lithuania in comparison with the Czech Republic meets a lot of difficulties, where the most important are higher unemployment and inflation levels, significant emigration, gravely lower high-technology exports share of manufactured exports and research and development expenditure (R&D) share of gross domestic product (GDP). Taking note on the common interests and their compatibility of the EU, this including Lithuania and the Czech Republic, it is important to strengthen the reciprocity and cooperation among the EU members and among international business subjects. National countries seek to secure their citizens a level of economic wellbeing and to create conditions for business subjects for economic activities and gaining economic benefit in order to encourage the installment of scientific and advanced technologies. The importance of this problem is increasing also because competitiveness among countries on the global level is rising, leading to the growth of variant differentiation among countries. On the other hand, because of the expression of globalization (the growth of international trade and foreign direct investments (FDI), the movement of the labour force among countries) the reciprocity among countries and at the same time among international business subjects is growing. All of this gives preconditions to strengthen integration and convergence among countries.

It is important to characterize the general development of a country's economy by describing the change of macroeconomic indicators. The development of economy is influenced by both internal and external factors. While assessing the factors of economic growth of a country, it is important to analyze real GDP, the changes of disposable income, salaries and savings, fluctuation of unemployment and inflation. When assessing the external factors it is important to pay attention to foreign trade (export, import), FDI and so on. The EU Member States, which cooperate and coordinate their activities on the government, international organization or international business levels, can achieve more stability.

When seeking economic growth, the most important factor is the expansion of business, leading to the rise of employment, expansion of infrastructure, more effective usage of energetic resources, fulfillment of scientific researches and innovations. Economic development depends on a country's national and international firms' ability to rationally use available resources, including the labour force, and use competitive advantages. On the other hand, it is important for each country and firm to keep and expand available markets and to gain influence in new ones.

This article aims to examine the development of the country's economy development as a factor for business activity and enlargement and to compare them among Lithuania, the Czech Republic and the EU on average and the European Union euro area (EU euro area) in the period of the years 2005-2013. In order to examine the changes of economic development the index of economic development as part of sustainable development in conditions of globalization in these countries was calculated. Both absolute and relative amounts are compared. The method of base indexes comparison is applied, whereas the first year of the analyzed period is chosen as base year. Also the ease of doing business and global competitiveness index in Lithuania and the Czech Republic are compared.

1 The importance of macroeconomic indicators

The economic relations among the countries and regions taking place in the world (international trade, foreign direct investment, labour force migration, structural reforms, etc) show that they are tied together in economic, social, cultural, informational, and political and so on links. The global financial crises, the ecological problems confirmed these interrelationships, so in today's conditions, state cooperation, performance of global organizations, coordinating national efforts and activities are very important. The results of successful performance of countries or international firms illustrate their high achievements and encourage other countries to study the best practices on macro and micro levels.

Scientific literature indicates that there is no single indicator which would be sufficient enough to determine the country's economic condition (Grebliauskas and Ramanauskas, 2007). It is emphasized that sets of indicators must be used, that there must be data sources of objective indicator calculations, that indicators must be measured quantitatively. It is suggested to take into account economic growth, labour and capital productivity, the national currency, income and consumption levels and quality of life (Grebliauskas and Ramanauskas, 2007; Krugman and Wells, 2006) of a country seeking to achieve specific economic policy outcomes.

The 2008 global financial crisis has shown that it is important not only to analyze the main macroeconomic indicators, but also supervise the multilateral financial markets (Purfield and Rosenberg, 2010; Kemal and Homi, 2011). This will allow the coordination of economic policies (for example, how to achieve inflation moderate) in a country and will im-

prove the country's economic performance and key macroeconomic results. Authors argue (Starkeviciute, 2013) that academic literature distinguishes more than 60 factors that affect: accelerate or slow down economic growth. When analyzing them more thoroughly, it is emphasized that most of the theoretical long-term economic growth factors are difficult to measure precisely. It is estimated that investment rate has a positive impact on economic growth. Starkeviciute (2013) stresses the vital importance of investments in buildings and production facilities and intellectual capital, characterized by a high level of qualification. Further research (Programme of Economic Development Processes ..., 2007) indicates that an investment in buildings and civil engineering works and the land has little productivity. In order to enhance the productivity and competitiveness of activity, productive investment, i.e., investment in equipment and machinery is especially important.

Both on a global and individual country level, economic sustainability is increasingly important for the business development. For a variety of reasons, without providing economic sustainability, the economy is cyclical. Scientific literature indicates that there is no single indicator which would be sufficient enough to determine the country's economic condition. Scientific literature (Melnikas, 2014; Galiniene et al, 2011) states that one of the priorities of economic growth and modernization on a global level is the activation of economic growth by increasing the productiveness and effectiveness of economic activity and raising the economic wellbeing of the society. This raises a question if a countries economic indicators are highly evaluated, does this mean the country has favorable business conditions? In scientific literature it is discussed which indicators are appropriate to be used to describe the development of coherence (Ciegis et al, 2010). 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 purchase power parity (PPP) in USD, foreign direct investment net inflows per capita (FDIpc) calculated in USD, employment rate (E) of the population aged 15 + total in %, real economic growth (EG) in %, unemployment rate level of population aged 15-64 years old (UR) in %, inflation rate (IR) in % and other. When finding a link between economic and business development, the index of economic development can be found and compared with the ease of doing business index and global competitiveness index of the country.

The index of economic development (I_{EDV}) is evaluated according (Ciegis et al, 2010) to the (1) formula:

$$I_{EDV} = \sum_{i=1}^n a_i \times I_i, \quad (1)$$

where a_i – is the weight of separate element of economic development indicator;

I_i – is the separate element, indicator involved into index of economic development;

n – number of separate elements, involved in economic analyze.

There are three elements or indicators that are analyzed as mostly effected economic sustainability and economic development of the country: GNIpc, FDIpc and employment. All three elements are uniform and equal and the sum of them is (formula 2) equal to 1:

$$\sum_{i=1}^n a_i = a_1 + a_2 + a_3 = 1. \quad (2)$$

Three indicators are used: indicator of GNIpc (I_{GNIpc}), indicator of FDIpc (I_{FDIpc}) and indicator of employment (I_E). Three indicators take the weighting expression, described in the (3) formula:

$$I_{EDV} = a_1 \times I_{GNIpc} + a_2 \times I_{FDIpc} + a_3 \times I_E, \quad (3)$$

The increase of these indicators means positive effects of economic development; and the decrease of these indicators means negative changes in the economy, related with recession of the economy described.

2 The main characteristics of inside and external development factors for the business

The analysis of statistical data, given in Table 1, shows that real GDP contracted in 2009 in Lithuania was about 14.7%, in the Czech Republic -4.8%, in the EU -4.3 % and in the EU euro area -4.4%. Economic growth is seen in all the analyzed countries since 2010. The recession happened in the Czech Republic and in the EU and in the EU euro area in the year 2012.

The change of real GDP in each country is directly related to the structure of its economic activities structure, e.g. the share of agriculture, industry and services in the whole economy. The agriculture value added as % of GDP, according to Table 1, in Lithuania has decreased in the period of 2005-2009 mostly: from 4.8% to 3.4%. In the year 2013 the value added increased a little and made 2.8% of GDP.

In the Czech Republic – it has decreased during the years 2006-2010, but from the year 2011 it increased and achieved 108.3% in comparison with the base year 2005. Both in the EU and the EU euro area the value added share approximately stayed at the same level.

Industry value added has decreased mostly in Lithuania: by 18.2 % in the year 2009, because the country is small, very open and depends on foreign markets, which since 2008 had been experiencing the financial crises. Industry value added in the Czech Republic has fallen down by 2.4% in the year 2009 and has not recovered until the year 2013. The share of industry value added in Lithuania in the year 2013 composed 92.7% of its level in the year 2005. This indicator in the Czech Republic was 97.4%.

Table 1 The main indicators of economy development and economic activity in the years 2005-2012

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013
1. Real GDP growth rate (EG), %									
LT	7.8	7.8	9.8	2.9	-14.7	1.3	6.0	3.7	3.3
CZ	6.4	6.9	5.5	2.7	-4.8	2.3	2.0	-0.8	-0.7
EU	2.1	3.3	3.2	0.3	-4.3	2.1	1.8	-0.4	0.1
EUea	1.7	3.3	3.0	0.4	-4.4	2.1	1.7	-0.7	-0.5
2 Agriculture value added, % of GDP									
LT	4.8	4.3	3.9	3.7	3.4	3.5	3.8	4.0	3.8
- growth rate, %	100.0	89.6	81.2	77.1	70.8	72.9	79.2	83.3	79.2
CZ	2.4	2.3	2.2	2.1	1.8	1.7	2.4	2.6	2.6
- growth rate, %	100.0	95.8	91.7	87.5	75.0	70.8	100.0	108.3	108.3
EU	1.7	1.6	1.6	1.6	1.4	1.6	1.6	1.6	1.7
EUea	1.8	1.7	1.7	1.7	1.5	1.6	1.7	1.7	1.8
3. Industry value added, % of GDP									
LT	32.9	32.9	32.6	31.6	26.9	28.2	31.2	31.1	30.5
- growth rate, %	100.0	100.0	99.1	96.0	81.8	85.7	94.8	94.5	92.7
CZ	37.7	38.2	38.2	37.7	36.8	36.8	37.1	37.0	36.7
- growth rate, %	100.0	101.3	101.3	100.0	97.6	97.6	98.4	97.4	97.4
EU	26.3	26.6	26.6	26.1	24.3	25.6	24.8	24.5	24.3
EU ea	26.6	26.8	27.0	26.5	24.5	26.3	25.0	24.8	24.6
4. Value added in services, % of GDP									
LT	62.3	62.8	63.5	64.7	69.7	68.3	65.0	65.0	65.7
- growth rate, %	100.0	100.8	101.9	103.8	111.9	109.6	104.3	104.3	105.4
CZ	59.8	59.5	59.6	60.2	61.4	61.5	60.5	60.4	60.7
- growth rate, %	100.0	99.5	99.7	100.7	102.7	102.8	101.3	101.0	102.9
EU	71.9	71.7	71.7	72.2	74.2	72.8	73.6	73.9	74.1
EUea	71.5	71.4	71.2	71.8	73.9	72.0	73.3	73.5	73.7

Note: LT – Lithuania; CZ – Czech Republic; EUea – EU euro area
Source: author's calculations based on The World Bank Group Data

The decrease of share of industry value added in the EU and EU euro area began in the year 2008, and in the year 2010 it almost reached the pre-crisis value, but in the years 2011-2013 it continued to decrease and was accordingly 24.3% and 24.6% of GDP.

The services sector according to its share in a country's GDP structure is the most important in each separate analyzed country. The value added in services, calculated as % of GDP, in Lithuania has grown intensively in comparison with the Czech Republic, accordingly, by 5.4% and by 2.9%. Positive quantitative and qualitative changes occur in the service sector in Lithuania and the Czech Republic, causing the countries' changes of economy structure, which manifests as expansion of financial services, tourism, and health care industry. The value added in services has increased both in the EU and in the EU euro area by 3.1%.

Another aspects of inside economic development factors, as shown in Table 2, are the level of domestic and foreign income, as GNIpc (given in PPP terms in US dollars); R&D expenditure of GDP (in %); employment, unemployment rate, inflation rate and discomfort rate.

The amount of GNIpc in Lithuania and in the Czech Republic in the year 2005 was less than GNIpc of the EU. GNIpc in Lithuania in the year 2005 consisted of 53.8%, o in the Czech – 79.3% of GNIpc in the EU. Otherwise the GNIpc level in Lithuania in the year 2005 was only 67.9% from the level of the GNIpc in the Czech Republic. The GNIpc in Lithuania during the years 2005-2013 has increased faster in comparison with the Czech Republic. The changes of GNIpc growth during the years 2005-2013 was: in Lithuania 70.0% and in Czech –25.7%. This indicator during the analyzed period of time has increased in the EU by 32.1% and in the EU euro area – by 26.9%. The amount of GNIpc in Lithuania and in the Czech Republic in the year 2013 was: in Lithuania only 69.2%, and in the Czech Republic – 75.4% of GNIpc of the EU. It should be noted, that the GNIpc in the EU euro area in the year 2005 was by 12.4% bigger than in the EU and such tendency continued until the year 2013, when GNIpc was bigger by 8.1%.

The share of R&D expenditure of GDP in Lithuania and the Czech Republic was less than in the EU or the EU euro area. The amount of R&D expenditure in Lithuania in the year 2005 was only 66.7% from the level of the R&D expenditure in the Czech Republic. R&D expenditure in the Czech Republic in the period of 2005-2013 increased rapidly unlike expenses in Lithuania. The gap between Lithuania and the Czech Republic according to this index continued to increase and in year 2013 it made up only about 47.9% of the Czech Republic spendings.

For a long time Lithuania had benefit from relatively cheap labour force and the adaptation of existing technology. Due to a big net migration, which in the years 2010-2014 decreased the population by 28 394 people, caused the emerge of skills shortages. Private sector investment, especially into R&D, is low. On the contrary, in the Czech Republic the net migration is positive and the number of population has increase by 199 999 people during the years 2010-2014. The number of unemployed people in Lithuania during the years 2005-2013 increased and the unemployment rate in the year 2013 was 11.8%. A better situation is in the Czech Republic, where unemployment level in the year 2013 in comparison with the base year has decreased by 12.7% and achieved 6.9%.

Table 2 The changes of GNIpc and inside economic development factors in the years 2005-2013

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	Change during the years 2005-2013, %
1. GNIpc (PPP), USD										
LT	14440	16430	18350	20010	18540	19470	21590	23080	24550	70.0
CZ	21280	22950	24950	25350	25210	25020	26270	26610	26740	25.7
EU	26844	29096	30669	31908	31269	32001	33343	33376	35461	32.1
EUea	30187	32762	34537	35801	35188	36126	37620	37633	38317	26.9
2.R&D expenditure of GDP, %										
LT	0.8	0.8	0.8	.8	0.8	0.8	0.9	0.9	...	12.5
CZ	1.2	1.3	1.4	1.3	1.4	1.4	1.64	1.88	...	56.7
EU	1.8	1.8	1.8	1.9	2.0	2.0	2.0	2.1	...	16.7
EUea	1.8	1.9	1.9	2.0	2.1	2.1	2.1	2.1	...	16.7
3 .Employed persons, millions										
LT	1.435	1.450	1.472	1.452	1.347	12.690	1.304	1.334	1.349	-6.0
CZ	4.761	4.812	4.912	4.982	4.902	4.858	4.891	4.911	4.959	4.2
EU	215.49	219.44	223.70	226.28	222.07	220.76	221.51	220.04	219.36	1.8
EUea	140.59	143.09	146.02	147.52	144.70	143.85	144.30	143.02	141.40	0.6
4.Unemployment level, %										
LT	8.3	5.6	4.3	5.8	13.7	17.8	15.3	13.2	11.8	42.2
CZ	7.9	7.1	5.3	4.4	6.7	7.3	6.7	7.0	6.9	-12.7
EU	8.9	8.2	7.2	7.0	9.0	9.6	9.6	10.5	10.9	22.5
EUea	9.0	8.4	7.5	7.5	9.5	10.1	10.1	11.4	12.1	34.4
5.Inflation rate, %										
LT	6.6	6.6	8.5	9.6	-3.6	2.6	5.4	2.6	1.7	-74.2
CZ	0.4	0.7	3.5	2.0	2.6	-1.5	-0.2	1.4	1.7	325
EU	2.6	3.0	3.0	3.2	1.8	1.0	1.7	1.6	1.4	-46.2
EUea	2.4	3.0	3.0	2.7	1.1	0.8	1.6	1.5	1.4	-41.7

Discomfort index, %

LT	14.9	12.2	12.8	15.4	10.1	20.4	20.7	15.8	13.5	-9.4
CZ	8.3	7.8	8.8	6.4	9.3	5.8	6.5	8.4	8.6	3.6
EU	11.5	11.2	10.2	10.2	10.6	11.3	12.1	12.3	12.3	7.0
EU Uea	11.4	11.4	10.5	10.2	10.6	10.9	11.7	12.9	13.5	18.4

Note: LT –Lithuania; CZ – Czech Republic; EUea – EU euro area
* – change during the years 2005-2012, %

Source: author's calculations based on The World Bank Group Data

The total number of employed persons has decreased in Lithuania by -6.0%, while this number in the Czech Republic has increased by 4.2%. The number of employed persons in the EU and the EU euro area has increased, adequately, by 1.8% and 0.6%.

The biggest inflation fluctuations were in Lithuania. In the year 2013 the inflation level in Lithuania and the Czech Republic was about 1.7%. In the EU and the EU euro area it was smaller and reached 1.4%.

Problems caused by unemployment and inflation are summarized by the discomfort index. It shows that in Lithuania in comparison with the Czech Republic, macroeconomic problems are bigger during the whole analyzed period, as it shown in Table2.

The most important external economic development factors, as shown in Table 3, are: FDI net inflows of GDP in %; FDIpc in USD; exports of goods&services of GDP in %; high-technology exports of manufactured exports in %. The share of FDI net inflows of GDP, measured in %, have had decreased in all countries. Although FDI net inflows during the financial crisis of the year 2008 has diminished both in Lithuania and the Czech Republic, but FDI net inflow share in the years 2012-2013 was bigger in the Czech Republic than in Lithuania. On the other hand, the share of FDIpc in Czech Republic in the year 2005 was bigger by 3.2 times than in Lithuania. In the year 2013 this difference somewhat decreased, but still exists and differs about 2 times.

Table 3 The changes of external economic development factors in the years 2005-2012, in %

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	Change during the years 2005-2013, %
1. FDI net inflows of GDP, %										
LT	4.6	6.8	5.9	4.0	0.1	2.4	3.3	1.4	1.6	-65.2
CZ	8.5	3.6	5.6	2.8	1.4	3.0	1.0	3.9	2.4	-71.8
EU	5.4	4.8	6.1	4.6	2.2	3.3	2.8	1.6	1.6	-70.4
EUea	4.2	3.9	5.0	3.1	2.6	4.0	3.0	1.4	1.9	-54.8
2. FDIpc, USD										
LT	358.1	621.8	719.9	596.4	6.0	278.3	476.3	192.0	241.0	-32.7
CZ	1136,3	5392,0	1029,7	633,2	274,8	584,4	214,2	758,9	476,0	-58.1
EU	1629,2	1384,6	2217,2	1757,4	611,2	390,2	825,2	550,4	581,3	-63.9
EUea	1470,9	1161.0	2054,7	1363,9	802,2	411,0	988,9	517.9	737,5	-49.9
3 .Exports of goods&services of GDP, %										
LT	57.3	58.8	53.8	59.6	54.3	67.8	77.1	83.0	...	*44.8
PL	62.3	65.3	66.6	63.4	58.8	66.2	71.6	76.5	77.2	23.9
EU	35.2	37.3	37.9	39.5	34.3	37.8	40.4	41.4	41.5	17.9
EUea	36.0	38.0	39.1	39.4	34.5	38.3	41.0	42.4	42.7	18.6
4.High-technology exports of manufactured exports%										
LT	6.2	8.1	10.8	11.1	10.0	10.6	10.2	10.4	...	* 67.7
CZ	13.0	14.3	13.2	13.6	14.6	15.3	16.3	16.1	...	*23.8
EU	17.2	16.8	13.8	13.3	14.9	15.0	14.5	15.2	...	*-11.4
EUea	18.3	18.5	14.2	13.6	15.6	15.4	14.9	15.5	...	*-15.4

Note: LT –Lithuania; CZ – Czech Republic; EUea – EU euro area; * – change during the years 2005-2012, %

Source: author's calculations based on The World Bank Group Data

3 Index of economic development as precondition for business enlargement

The analysis of macroeconomic indicators shows that Lithuania had an improving economic situation for business development during the years 2005-2013. Economic development index, according to the described method is calculated and given in Table 4. The calculation shows that different countries achieved different situations.

Economic growth in Lithuania slowed down a bit in the year 2008 and the downfall manifested in the year 2009. Calculated economic development index in the year 2010 shows, that Lithuanian economy has recovered, but slightly, after the economic downfall. The index of economic development in the year 2013 exceeds by 5.9% its level in the base year 2005.

The index of economic development of the Czech Republic from the year 2008 did not exceed the base year value of the index of economic development. This situation is caused mainly by the decrease of FDI net inflow into the country from the year 2008. The indicator of employment in the Czech Republic is bigger in comparison with the Lithuanian employment level, so it caused a higher level of economic growth.

The EU and the EU euro area in the years 2009-2013 did not achieve the economic development level of the year 2005. This process was caused by the contraction of FDIpc in these countries.

Although Lithuania is in the list of thirty countries, that have the most favorable business environment, its macroeconomic indicators are not better than the macroeconomic indicators of the Czech Republic.

The macroeconomic indicators of the Czech Republic, as was shown, are significantly higher, but its business environment indexes are lower. The ease of doing business and the global competitiveness index of Lithuania and the Czech Republic are given in Table 5.

Table 4 The changes of the index of economic development and its structure in the years 2005-2013, in %

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013
1. GNIpc index, %									
LT	33.4	38.0	42.5	46.2	42.6	45.0	49.7	53.3	56.8
CZ	33.4	36.0	39.2	39.8	39.6	39.3	41.2	41.8	42.0
EU	33.4	36.2	38.1	39.6	40.0	39.9	41.6	41.7	44.1
EUea	33.4	36.2	38.2	39.6	38.9	40.0	41.6	41.6	42.4
2. FDIpc index, %									
LT	33.3	57.8	66.9	55.6	0.6	25.9	44.3	17.9	17.8
CZ	33.3	158.0	30.2	18.6	8.0	17.1	6.3	22.2	14.0
EU	33.3	28.3	45.3	35.9	12.5	8.0	16.9	11.2	11.9
EUea	33.3	26.3	46.5	30.9	18.2	9.3	22.4	11.7	16.7
3. Employment index, %									
LT	33.3	33.6	34.1	33.7	31.2	29.4	30.2	31.0	31.7
CZ	33.3	33.7	34.4	34.8	34.3	34.0	34.2	34.4	34.7
EU	33.3	33.9	34.5	34.9	34.3	34.1	34.2	34.2	33.9
EUea	33.3	33.9	34.6	34.9	34.3	34.1	34.2	33.9	33.5
4. Index of economic development, %									
LT	100.0	132.1	143.5	135.4	74.4	100.3	124.2	102.2	105.9
CZ	100.0	227.7	103.8	93.2	81.9	90.4	81.7	98.4	90.7
EU	100.0	98.4	117.9	110.4	86.8	82.0	92.7	87.1	89.9
EUea	100.0	96.4	119.3	105.4	91.4	83.4	98.2	87.2	92.6

Note: LT – Lithuania; CZ – Czech Republic; EUea – EU euro area
Source: author's calculations based on The World Bank Group Data

Table 5 The changes of ease doing business and global competitiveness index of Lithuania and Czech Republic in the year 2005-2013

	Ease doing business				Global competitiveness index			
	2005	2009	2011	2013	2005	2009	2011	2013
LT	15	28	23	24	40	47	44	48
CZ	41	75	63	44	29	36	38	37

Source: Doing Business 2005-2013data; Schwab et al., 2006; Schwab and Sala-i-Martin, 2013

4 Discussion

The main macroeconomic indicators characterize the current situation in countries, including ease doing business, which causes the competitiveness of each country. When analyzing the Lithuanian and the Czech Republic case, it is interesting that the macroeconomic indicators of the Czech Republic (GNIpc, employment, FDIpc, unemployment and inflation rates) in comparison with the same indicators in Lithuania are better and show higher economic development level. Otherwise, such business development indicators as R&D expenditure, the use of high-technology are inherent more to the Czech firms in comparison with Lithuanian firms. The analysis of doing business shows, that it is easier to do business in Lithuania than on the Czech Republic. The research of global competitive indexes shows, that the Czech Republic has a better position in the global economy level. It is very important that the stage of development in the Czech Republic is driven by innovation and in Lithuania – the stage is transition from efficiency driven to innovation driven.

According to the calculation, the index of economic development is higher in Lithuania. Otherwise, it was shown in the study that the Czech Republic, according to the main macroeconomic indicators and their changes during the years 2005-2013, is a more rapidly developing country than Lithuania. How did it happen that according to the index of economic development the Czech Republic is behind Lithuania? Which reasons caused that the EU and the EU euro area the index of economic development is less than this index in Lithuania during the years 2006-2013, with the exception of year 2009? It is likely that such situation occurred due to the same reason – the decline of FDIpc from the year 2006 until the year 2013.

Conclusion

The article analyses links between the main macroeconomic indicators of a country and the ease of doing business. For the determination of these links, the macroeconomic indicators of Lithuania, the Czech Republic, the EU and the EU euro area were compared. The analysis showed that in all the countries FDIpc plays a significant role in economic development. After the year 2008 global financial crisis, FDI greatly decreased in Lithuania, the Czech Republic and in the EU. On the other hand, in the base year (2005), FDIpc was very high in the Czech Republic, the EU and the EU euro area and this level in the post-crisis period was never reached. In the base year FDIpc in Lithuania was smaller than in the Czech Republic, so this index in Lithuania increased.

A higher index of economic development in Lithuania is due to a more rapid growth of GNIpc index and partly faster increase of FDIpc index in Lithuania than in the Czech Republic, the EU and the EU euro area, although the absolute size of these indexes in the EU euro area, in the EU and in the Czech Republic are bigger.

The globally determined index of ease doing business is better in Lithuania in comparison with the Czech Republic. It showed that Lithuania was in the 24th position in the world (from 148 countries) and the Czech Republic was in the 44th position in the year 2013. The global competitiveness index displayed that Lithuania was in 48th position and Czech Republic in the 37th position. Global competitiveness index is more related with the macroeconomic indicators. The changes of the index of economic development and its structural elements in Lithuania are better than in the Czech Republic. Due to this reason the index of ease doing business in Lithuania is higher than in the Czech Republic. The economic development in absolute dimensions in the Czech Republic is higher in comparison with Lithuanian economic development, which causes bigger global competitiveness index in the Czech Republic.

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Share of small and medium-sized enterprises in stimulating the socio-economic development of the świętokrzyskie province communes (Poland) in the years 1995-2013

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Abstract

Purpose of the article The article presents a research method, the use of which has enabled an analysis of the all 102 świętokrzyskie province communes due to their socio-economic level of development.

Methodology/methods Each commune has been characterized by the 37 selected characteristics divided into five groups (factors), named as follows: Enterprise, Society, Finance, Infrastructure and the Natural Environment. For each of the 37 characteristics (described by 102 values) a numeric index in the range [-1, 1] has been created, which allows to compare their importance for the development of a commune. For the five groups of characteristics the numerical measures have been defined, which indicate their importance for the commune development. Their sum stands for the total aggregate measure of socio-economic development of each commune.

Scientific aim Application of this method allowed to extract six types of development of communes (high level of development, rather high, average higher, average lower, rather low and low). The study, in which the so-processed data from the years 1995, 2005, 2009 and 2013 were compared, made it possible to identify communes with significantly improved or worsened socio-economic situation.

Findings Factors conducive improving the socio-economic situation in communes have been identified. After using the aggregate measure of socio-economic development of communes in order to assign them types of development, a relationship between their investment attractiveness (the type of development) and entrepreneurship was examined. This made it possible to determine the contribution of small and medium-sized enterprises in stimulating socio-economic development of the communes in the years 1995-2013.

Conclusions Analysis of measures in the field of factors as well as the total aggregate measure has shown that a decisive impact on socio-economic development of communes have the factors: Enterprise, Finance and Infrastructure. All three factors are strongly connected with SME and entrepreneurship.

Keywords: Mathematical Methods, Factor Analysis, Regional Economics, Measurement Regional Development, Regional Changes, Commune Economics

JEL Classification: C020, C380, R1, R110

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Introduction

Local (regional) development covers many areas of life, for both the environment as well as social, cultural and economic dimensions. The main problem is an inadequate human resources management, reflecting in unemployment and excessive consumption of natural resources (specifically related with non-renewable resources, (Brodziński, 2010)). This problem can be solved by forming in communes such administrative structures and incentives (Zalewski, 2007), that will be attractive to investors and will foster the growth of employment. This issue should be resolved differently in each area, taking into account the specific nature of human resources, capital, infrastructure and others.

Here the local development of Świętokrzyskie communes (in Polish: *gmina*) is discussed. Factors of local development can be determined using different criteria (Wong, 1998; Patyk, 2001; Hindson and Meyer-Stamer, 2007; Miłek, 2009; Capello, 2011). In this article, the local development factors are represented by figures presented on the websites of the Polish Central Statistical Office. Unlike the other methods used to analyze the factors of local development (McGranahan and Richard, 1985; Ungureanu et al., 2013; Chamberlain, 2013), a new quantitative method, based on statistical data from many years, is used. Both, economic and non-economic factors, are deciding about the development of communes.

The aim of the study is to examine which of the factors under consideration have a decisive impact on the local development. For this purpose, appropriately constructed measures, describing this development in five areas, were compared. As a point of reference for the participation of individual characteristics in local development deviation from the average values of the individual characteristics upward or downward was adopted. The calculations were done for all 102 communes in the Świętokrzyskie province. The aim of the analysis carried out for data from years 1995-2013 was to find communes that, as a result of socio-economic activity, decidedly improved or worsened their position compared to other communes. The analysis allowed to identify the factors having a decisive impact on the socio-economic situation of communes.

1 Methodology of research the socio-economic development of communes

In order to examine the socio-economic level of development of communes in Świętokrzyskie a research method was used whose main aim was to bring all the studied characteristics, presented on the websites of the Central Statistical Office, to comparable size. Characteristics were selected from five areas (hereinafter referred to as factors), describing Society (Rakowski and Pakulska, 2001; Zielińska, 2006; Bujala, 2006; Borek, 2006), Enterprises, Finances in communes (Owsiak, 2006; Pietrzak et al., 2003), social and technical Infrastructure (Lijewski, 2004; Parysek, 2001; Mazurkiewicz, 2000; Punkiel, 1974), and the Natural Environment (Fierla, 2004). Characteristics were divided into stimulants (characteristics supporting development) and destimulants. The following characteristics have been selected:

- 7 characteristics describing **enterprises**, i.e. units of REGON (Register of National Economy) in general; agriculture; manufacturing; construction; trade; hotels and restaurants; education, all per 1,000 inhabitants;
- 8 characteristics describing **society** (birth rate per 1,000 population, population density, people of preworking age (% of population) people of working age (% of population) people of retirement age (% of population) - destimulant, net migration per 1,000 population; working total (% of people of working age), unemployment (% of people of working age) - destimulant);
- 11 characteristics concerning the **finances** of communes, i.e. total revenues; own income, property tax, share in taxes constituting the state budget income, off-budget revenues, total expenditures, investment capital expenditures, expenses for communal economy and environmental protection, expenses on health care, expenses on social welfare, expenditures for local and public administration (destimulant), all per capita;
- 9 of characteristics of the technical and social **infrastructure** (shops per 1,000 inhabitants, usable floor space [m²/person]; books per capita; financial intermediation units per 1,000 inhabitants; the percentage of the population using water supply system, the percentage of the population using sewage system, clinics - the number of per 10,000 inhabitants, pharmacies and pharmacy outlets - number per 10,000 inhabitants, health units per 1,000 inhabitants);
- 2 characteristics related to the **natural environment**, i.e. forest land and protected areas, (percentage of commune area).

In the further analysis the five factors will be referred to as Enterprises, Society, Finance, Infrastructure and Natural Environment.

In total, in the years 2003, 2009 and 2013, thirty seven characteristics were chosen to the analysis. In 1995, some of the data has not yet been published (unemployment as % of working age, % of people using the water supply and sewage systems as well as forest land area), and therefore to the analysis only 7 characteristics of the society, 7 characteristics describing the infrastructure and one characteristic on the natural environment were chosen - together with enterprises and finance it was 32 characteristics.

These characteristics, which had reference to the Polish Classification of Activities, were chosen in accordance with the specified code. Since, however, in the years 1995-2013, these codes have been changed, we do not cite them here.

The individual characteristics of communes have been converted into comparable values (per person, per 1,000 people per 10,000 people, per 1 km², the percentage of the population, the percentage of the surface, etc.). For every 102 comparable values describing each one characteristic the average value was determined. Subtracting it from the values describing this characteristic, its description in terms of positive numbers (illustrating the level of characteristics higher than the average) and negative (level characteristics lower than the average) was obtained. Obtained this way numbers were then divided by the absolute value of the largest one for each characteristic, this way obtaining numbers in the range [-1; 1] (the normalized parameters). Usually the largest absolute value was a positive number - hence the upper limit of the range most often is 1; then the lower limit belongs to the interval (-1,0).

Next, such prepared parameters describing the characteristics of communes were summed within each of the five factors. The stimulants were taken into account with the sign, resulting from the calculations, and destimulants – with the opposite sign. In this way, the aggregated measure has been received, describing numerically each commune in the field of the five factors. The total aggregate measure was obtained by summing up the five calculated measures for the factors.

The range of variation of the obtained measures was divided into sextiles. It helped put any commune at the appropriate level of development in the field of each factor and for the total aggregate measure, namely:

- type I – a high level of development;
- type II – a fairly high level of development;
- type III – a higher average level of development;
- type IV – a lower average level of development;
- type V – a fairly low level of development;
- type VI – a low level of development.

Measures of the factors as well as the total aggregate measure were calculated for data from the years 1995, 2003, 2009 and 2013. This way, it was possible to identify those among the analyzed factors that could have the most important impact on the socio-economic development of communes.

The adopted methodology allows to compare the communes in terms of development in the field of individual factors. Observing how was changing the type of development for the communes in the period 1995-2013, will make possible to determine factors deciding about their socio-economic development.

2 Aggregated measures for the factors in the years 1995, 2003, 2009 and 2013

Within the individual factors the communes are able to obtain or lose the points accordingly to normalised values of characteristics included in the factors.

2.1 Enterprises

Number of communes in the first sextile in subsequent years was 2 (in 1995 and 2003) or 1 (in 2009 and 2013). This is illustrated in Table 1, which shows the 5 top rated communes in individual years. The maximum number of points obtainable in different years was 6.559 (in 1995), and 7 in other years. The vast majority of enterprises in the province are micro, small and medium firms, over 97% of all companies. Furthermore, a significant number of large companies are offices, schools and universities, and hospitals. The small and medium enterprises are the main driver of socio-economic development.

While in 1995, among the five highest-rated communes was one rural commune (Sitkówka-Nowiny), located near Kielce, in the remaining years the fast developing enterprises in towns with county rights (Kielce) and with commune rights (Sandomierz, Skarżysko-Kamienna) as well as in urban-rural communes (Końskie, Busko-Zdrój), caused significant differences in assessments regarding the first three sextiles. In 1995, number of communes in the first three sextiles was, respectively, 2, 9 and 12; in 2003 – 2, 4 and 17, in 2009 – 1, 4 and 12, and in 2013 – 1, 1, and 12. It was a result of business creation in cities.

Number of communes in the sixth sextile was from 10 (in 2009) to 23 (in 2013). Table 2 shows the five lowest rated communes in individual years. The maximum number of points that could be lost in individual years was -3.053 (in 1995), -2.758 (in 2003), -2.351 (in 2009), -2.410 (in 2013).

Communes located in the sixth sextile, belong to rural communities. They lie most often on the outskirts of the province, far from urban centers, with no major enterprises, with little opportunity for development, both because of the small number of enterprising people and low own income of communes.

Table 1 Factor Enterprise - the five highest-rated communes in individual years

1995		2003		2009		2013	
commune	points	commune	points	commune	points	commune	points
Kielce	2.826	Sandomierz	3.699	Sandomierz	3.897	Sandomierz	3.602
Sandomierz	2.578	Kielce	3.152	Kielce	2.653	Kielce	2.719
Skarżysko-Kamienna	2.042	Skarżysko-Kamienna	2.606	Busko-Zdrój	2.152	Busko-Zdrój	1.744
Końskie	1.957	Końskie	2.599	Ostrowiec Św.	2.063	Skarżysko-Kamienna	1.736
Sitkówka-Nowiny	1.848	Staszów	2.183	Skarżysko-Kamienna	2.054	Końskie	1.610

Source: own study based on Central Statistical Office data

Table 2 Factor Enterprise - the five lowest rated communes in individual years

1995		2003		2009		2013	
commune	points	commune	points	commune	points	commune	points
Smyków	-1.239	Skalbmierz	-1.614	Lipnik	-1.265	Lipnik	-1.168
Waśniów	-1.273	Czarnocin	-1.636	Fałków	-1.403	Iwaniska	-1.231
Czarnocin	-1.399	Opatowiec	-1.642	Czarnocin	-1.421	Szydłów	-1.395
Pacanów	-1.487	Imielno	-1.778	Szydłów	-1.469	Fałków	-1.417
Łubnice	-1.581	Bejsce	-2.006	Bejsce	-2.016	Bejsce	-1.559

Source: own study based on Central Statistical Office data

In subsequent years, 43, 47, 44 and 46 communes got a positive measure (out of 102 communes in the province). The spread between the highest and the lowest assessed commune grew in the years 1995-2009. In 2013, the spread has decreased a bit due to the global economic crisis.

2.2 Society

Number of communes in the first sextile in individual years was from 4 (in 2009) to 8 (in 2003). Table 3 shows the 5 highest rated communes. The maximum number of points obtainable in individual years was 6.777 (in 1995), 7.494 (in 2003), 7.695 (in 2009), 7.665 (in 2013).

Size of measures of the factor Society is associated largely with the possibility of finding suitable accommodation, work, health care and technical and social infrastructure. However, while in the nineties and early twenty-first century it meant first of all popularity of cities, in the later years the migration to suburban communes began. Quickly began to develop such commune as Morawica or Górno, lying near Kielce, or commune Bodzechów, located near Ostrowiec Świętokrzyski. Young people (and not only) started to move to these communes, therefore there was a positive natural growth, while in cities the natural growth became negative due to migration to the countryside and predominance of deaths over births. The population of suburban communes was mainly employed in the city, so own revenues of the communes increased.

Number of communes in the sixth sextile was from 5 (in 2003) to 15 (in 2013). Table 4 shows the 5 lowest-rated communes in individual years. The maximum number of points that could be lost was -4.169 (in 1995), -4.911 (in 2003), -4.873 (in 2009), -4.802 (in 2013).

Many of the same communes can be found when comparing communes of sextile sixth in the factors of Enterprise and Society. This is due to the lack of prospects of finding a job there and as a result - migration to bigger cities or abroad.

In subsequent years, 48, 44, 46 and 47 communes got a positive measure (out of 102 commune the province) At the same time (apart from 1995, where the unemployment rate as a percentage of working age was not included), the spread between the highest and the lowest assessed commune increased.

Table 3 Factor Society - the five highest-rated communes in individual years

1995		2003		2009		2013	
commune	points	commune	points	commune	points	commune	points
Sitkówka-Nowiny	4.130	Połaniec	3.386	Morawica	3.909	Morawica	4.435
Kielce	3.226	Morawica	3.198	Górno	3.071	Połaniec	3.751
Połaniec	3.137	Sitkówka-Nowiny	3.167	Połaniec	2.915	Strawczyn	3.725
Ostrowiec Świętokrzyski	2.988	Górno	2.811	Strawczyn	2.830	Miedziana Góra	3.670
Sandomierz	2.966	Kielce	2.680	Piekoszów	2.787	Górno	3.605

Source: own study based on Central Statistical Office data

Table 4 Factors Society - five lowest rated communes in considered years

1995		2003		2009		2013	
commune	points	commune	points	commune	points	commune	points
Michałów	-1.907	Tarłów	-1.896	Wojciechowice	-1.648	Bliżyn	-1.611
Ruda Maleniecka	-1.913	Działoszyce	-2.087	Stąporków	-1.798	Radków	-1.627
Kije	-1.989	Secemin	-2.245	Bejsce	-1.964	Stąporków	-1.638
Opatowiec	-2.053	Ruda Maleniecka	-2.382	Secemin	-2.090	Wojciechowice	-1.670
Pacanów	-2.271	Radków	-2.818	Czarnocin	-2.090	Bejsce	-1.678

Source: own study based on Central Statistical Office data

2.3 Finance

Number of communes in the first sextile in individual years was 1 (in 1995 and 2003) and 4 (in 2013). This is illustrated in Table 5, which shows the 5 highest rated communes in each considered year. The maximum number of points obtainable in individual years was 11.

Commune own revenues have the biggest impact at factor Finance. They are highly dependent on whether in a commune there are companies, paying high taxes, including property tax. The own income of commune also significantly depends on the tax on individuals. Creating jobs in the commune is one of the ways to increase commune's own income. The second way is the construction of infrastructure to encourage urban population with high incomes to move to the countryside. Both of these methods have been successfully used by Morawica. In the commune Sitkówka-Nowiny large companies and mines are located, and in addition there are created excellent conditions to start one's own businesses and settle in the village. It is facilitated by proximity of the a big city, the capital of province, Kielce. Thanks to good infrastructure, migration to countryside and SME also communes like Daleszyce, Chęciny, Piekoszów (lying near Kielce) and Bogoria (near Sandomierz) prosper well.

Table 5 Factor Finance - five highest rated communes in individual years

1995		2003		2009		2013	
commune	points	commune	points	commune	points	commune	points
Sitkówka-Nowiny	6.952	Sitkówka-Nowiny	5.354	Sitkówka-Nowiny	5.15 7	Sitkówka-Nowiny	4.969
Połaniec	3.925	Połaniec	3.406	Połaniec	4.13 1	Kielce	4.666
Pińczów	2.527	Kielce	2.811	Kielce	3.54 3	Solec-Zdrój	4.565
Kunów	2.479	Sandomierz	2.160	Raków	3.00 3	Połaniec	4.502
Ostrowiec					2.97		
Świętokrzyski	1.982	Ożarów	1.919	Morawica	6	Bogoria	1.757

Source: own study based on Central Statistical Office data

Number of communes in the sixth sextile was from 23 (in 2013) to 53 (in 2003). Table 6 shows the 5 lowest-rated communes. The maximum number of points that could be lost was -2.535 (in 1995), -2.109 (in 2003), -2.841 (in 2009), -2.669 (in 2013).

In the case of communes shown in Table 6, it can be said that there had failed entrepreneurship. Statistics show that the communes Złota or Wiślica, lying close to Busko-Zdrój or commune Klimontów, adjacent to the commune Bogoria, do not use their tourist assets nor create an environment conducive to entrepreneurship.

Table 6 Factor Finance - five lowest rated communes in the period under consideration

1995		2003		2009		2013	
commune	points	commune	points	commune	points	commune	points
Michałów	-1.429	Michałów	-1.141	Fałków	-1.649	Skarżysko	
Złota	-1.464	Moskorzew	-1.161	Opatowiec	-1.657	Kościełne	-1.202
Klimontów	-1.559	Oleśnica	-1.216	Wiślica	-1.691	Sadowie	-1.228
Wiślica	-1.654	Opatowiec	-1.231	Tarłów	-1.856	Moskorzew	-1.333
Skarżysko						Opatowiec	-1.350
Kościełne	-1.808	Łubnice	-1.273	Czarnocin	-1.919	Złota	-1.369

Source: own study based on Central Statistical Office data

In subsequent years, 43, 41, 41 and 39 communes obtained a positive measure (out of 102). The largest spread between the highest and the lowest assessed commune occurred in 2009 and amounted to 7.076. The number of communes of low own-income and not always creating expenses in the best way decreases, but still there are many of them.

2.4 Infrastructure

Number of communes in the first sextile in was 2 (in 2003, 2009 and 2013) to 3 (in 1995). This is illustrated in table 7, which shows the 5 highest rated communes in the considered years. The maximum number of points possible to gain was 7 (in 1995) and approx. 8.3 in the remaining years.

Technical and social infrastructure include shops, usable floor space per capita, books per capita, units of financial intermediation, network of water supply, sewerage, medical clinics, pharmacies and pharmacy outlets and health units. Developed infrastructure means conditions conducive to entrepreneurship, comfortable lives and health. It is therefore not surprising that the top five are mainly cities or urban-rural communes. The first rural commune could be found in considered period only around the tenth place.

Table 7 Factor Infrastructure - five top rated communes in individual years

1995		2003		2009		2013	
commune	points	commune	points	commune	points	commune	points
Sandomierz	4.065	Sandomierz	4.84	Sandomierz	4.43	Sandomierz	4.707
Opatów	3.297	Kielce	4.06	Kielce	3.88	Kielce	3.987
Kielce	3.214	Skarżysko-Kamienna	3.17	Skarżysko-Kamienna	3.07	Skarżysko-Kamienna	3.140
Skarżysko-Kamienna	2.887	Starachowice	8	Ostrowiec	6	Busko-Zdrój	2.935
Pińczów	2.211	Ostrowiec	2.73	Świętokrzyski	3.03	Ostrowiec	2.865
		Świętokrzyski	4	Busko-Zdrój	5	Świętokrzyski	
			2.55		2.90		
			6		8		

Source: own study based on Central Statistical Office data

Number of communes in the sixth sextile was from 13 (in 2013) to 29 (in 2003). Table 8 shows the 5 lowest-rated communes in individual years. The maximum number of points that could be lost was -3.686 (in 1995), -4.512 (in 2003), -4.292 (in 2009), -5.172 (in 2013).

So many communes in the sixth sextile can be explained by civilizational backwardness. In 2013, nine communes (out of 102) had no sewage system, and in the four communes more than 50% of the population had not benefited from the waterworks. In twelve communes was not a pharmacy, and in one there was not even a pharmacy outlet (Bejsce). Hence it is not surprising that many communes is not attractive for entrepreneurs, and thus, the residents have no prospect of employment. This leads to the aging of many villages, because young people are leaving in search of work and decent living conditions. In the 52 communes (out of 102), the number of people of retirement age is more than 20% of the population, and in five the number of people of working age is less than 60%.

Table 8 Factor Infrastructure - five lowest rated communes in individual years

1995		2003		2009		2013	
commune	points	commune	points	commune	points	commune	points
Falków	-1.705	Osiek	-1.566	Oksa	-1.669	Ślupia (Jędrzejowska)	-1.647
Lipnik	-1.713	Łopuszno	-1.586	Mniów	-1.677	Nagłowice	-1.872
Piekoszów	-1.916	Oksa	-1.696	Waśniów	-1.915	Łopuszno	-2.137
Pawłów	-2.201	Radoszyce	-1.787	Łopuszno	-1.950	Bejsce	-2.334
Strawczyn	-2.332	Bieliny	-2.059	Bieliny	-2.221	Waśniów	-2.387

Source: own study based on Central Statistical Office data

In subsequent years, 45, 44, 41 and 39 communes obtained a positive measure (at 102). This shows that there is a growing number of communes with infrastructure level lower than the average in the region. The largest spread between the highest and the lowest assessed commune occurred in 2009 and amounted to 7.076.

2.5 Natural Environment

Number of communes in the first sextile was from 1 (in 1995) to 11 (in 2013). This is illustrated in Table 9, which shows the 5 highest rated communes in individual years. The maximum number of points possible to get was 1 (in 1995) and approx. 1.8 in the remaining years.

Number of communes in the sixth sextile was from 18 (in 2013) to 32 (in 1995). Table 10 shows the 5 lowest-rated communes in considered period. The maximum number of points that could be lost was -0.63 (in 1995) and approx. -1.6 in the remaining years.

Table 9 Factor Natural Environment - five highest rated communes in individual years

1995		2003		2009		2013	
commune	points	commune	points	commune	points	commune	points
Oleśnica	1.000	Brody	1.717	Brody	1.646	Brody	1.604
Radoszyce	0.726	Bliżyn	1.671	Bliżyn	1.620	Bliżyn	1.566
Kunów	0.714	Wąchock	1.554	Wąchock	1.476	Suchedniów	1.530
Mirzec	0.708	Suchedniów	1.544	Suchedniów	1.465	Wąchock	1.444
Bałtów	0.706	Stąporków	1.471	Stąporków	1.434	Zagnańsk	1.350

Source: own study based on Central Statistical Office data

Table 10 Factor Natural Environment - five lowest rated communes in the period considered

1995		2003		2009		2013	
commune	points	commune	points	commune	points	commune	points
Starachowice	-0.630	Wilczyce	-1.515	Wojciechowice	-1.520	Wojciechowice	-1.526
Tarłów	-0.630	Bejsce	-1.545	Skalbmierz	-1.555	Bejsce	-1.564
Wilczyce	-0.630	Samorzec	-1.548	Bejsce	-1.556	Skalbmierz	-1.565
Wojciechowice	-0.630	Skalbmierz	-1.548	Samorzec	-1.558	Samorzec	-1.566
Zawichost	-0.630	Sandomierz	-1.557	Sandomierz	-1.569	Sandomierz	-1.577

Source: own study based on Central Statistical Office data

In subsequent years, 52, 58, 61 and 60 communes obtained a positive measure (at 102). The largest spread between the highest and the lowest assessed commune occurred in 2003 and amounted to 3.274.

It seems that this factor is hardly exploited. Many communes have excellent conditions for developing tourism and creating farm tourism. It seems, however, that these capabilities are not fully utilized.

3 The total aggregate measure

Summing up the measures of individual factors allowed to examine the overall level of socio-economic development of communes. Similar studies were also conducted in 1995 and 2003 (Molenda-Grysa, 2008).

Number of communes in the first sextile was from 2 (in 2013) to 4 (in 2009). This is illustrated in table 11, which shows the 5 highest rated communes in the considered period. As can be easily seen, these are communes with high aggregate measures in the field of individual factors. It is worth mentioning the total aggregate measure of Morawica. It is a result of politics of mayor managing the commune since 1989. He was the driving force for development of entrepreneurship and thanks to the development of water supply and sewage systems as well as road construction he caused the influx of many residents of the city of Kielce, which significantly increased the own income of the commune.

Table 11 Total aggregate measure - the five highest-rated communes

1995		2003		2009		2013	
commune	points	commune	points	commune	points	commune	points
Sitkówka-Nowiny	12.178	Kielce	12.286	Kielce	11.728	Kielce	12.589
Kielce	10.539	Sandomierz	11.611	Sitkówka-Nowiny	10.685	Sitkówka-Nowiny	9.255
Sandomierz	10.031	Nowiny	11.190	Morawica	9.272	Sandomierz	8.903
Starachowice	7.131	Połaniec	8.830	Sandomierz	8.617	Połaniec	8.430
Ostrowiec							
Świętokrzyski	7.084	Busko-Zdrój	7.077	Połaniec	7.363	Morawica	8.306

Source: own study

Table 12 shows the 5 lowest-rated communes in individual years. Also here one can easily find communes which had one of the lowest measures in the field of individual factors. This indicates, among others, unexploited potential of communes.

Table 12 Total aggregate measure - the five lowest rated communes in particular years

1995		2003		2009		2013	
commune	points	commune	points	commune	points	commune	points
Imielno	-3.800	Czarnocin	-5.289	Wilczyce	-4.968	Wilczyce	-4.867
Pacanów	-5.123	Wilczyce	-5.296	Moskorzew	-5.227	Lipnik	-4.973
Łubnice	-5.189	Falków	-5.329	Tarłów	-5.707	Czarnocin	-5.917
Czarnocin	-5.329	Moskorzew	-5.426	Czarnocin	-7.441	Moskorzew	-5.988
Lipnik	-5.937	Bejsce	-6.886	Bejsce	-7.744	Bejsce	-7.632

Source: own study

As mentioned in Part 1, the range of variation of normalized parameters were divided into sextiles, which allowed to assign to each commune a level of development in the field of each factor to one of six types of levels. Based on the spread of aggregated measures the length of sextile in each of the studied years was determined (Table 13).

Analysis of the data for the years 1995, 2003, 2009 and 2013 lead to following observations:

1. In the period from 1995 to 2013 spread of measures communes increased.
2. The number of communes with a negative and a positive measure in 2009 was more balanced than in previous years. Year 2013 brought a return to larger delamination of communes.
3. The spread of measures increases, reflecting the growing diversity in the development of commune.
4. In the years 1995-2009 the number of communes in the sextiles V and VI decreased, in sextiles III and IV grew, in sextiles I and II remained almost unchanged. In 2013 there were little changes in relation to 2009.
5. Quantitative distribution of communes in sextiles tends to a normal distribution.

Table 13 Parameters characterizing the aggregate measures in 1995, 2003, 2009 and 2013

	1995		2003		2009		2013	
	measure	number of communes	measure	number of communes	measure	number of communes	measure	number of communes
the maximum value of measure	12.18		12.286		11.728		12.589	
the minimum value of measure	-5.937		-6.886		-7.744		-7.632	
spread	18.115		19.172		19.472		20.221	
length of each sextile	3.019		3.195		3.245		3.370	
lower limit of sextile I	9.159	3	9.091	3	8.483	4	9.219	2
lower limit of sextile II	6.139	4	5.896	6	5.237	3	5.849	4
lower limit of sextile III	3.12	10	2.7	14	1.992	20	2.478	16
lower limit of sextile IV	0.101	17	-0.495	23	-1.253	33	-0.892	36
lower limit of sextile V	-2.918	52	-3.69	43	-4.499	37	-4.262	35
lower limit of sextile VI	-5.937	16	-6.886	13	-7.744	5	-7.632	9
number of communes with positive measure		38		38		45		46
number of communes with negative measure		64		64		57		56

Source: own study

The presented analysis shows that two groups of communes are formed: the developing ones and the lagging behind in their socio-economic development. Examples of communes that in the period 1995-2013 definitely improved their socio-economic development, are shown in Table 14. All of them are rural communes.

It is worth noting that in Krasocin commune the industrial processing per 100 inhabitants is most developed in the province. All companies belong to SME. This contributes to the socio-economic development of the commune.

Among the growing communes can also be placed such as Miedziana Góra (from 32 in 1995 to 6 in 2009), Smyków (from 31 in 1995 to 10 in 2009), Masłów (from 28 in 1995 to 8 in 2009) or Morawica (from 16 in 1995 to 3 in 2009). However, these communes in 2013 slightly lowered their position.

Table 14 Communes that in the considered period improved their socio-economic situation

	1995		2003		2009		2013	
	place	type	place	type	place	type	place	type
Imielno	98	VI	92	VI	72	V	67	IV
Michałów	88	VI	87	V	83	V	44	IV
Oksa	80	VI	77	V	55	IV	52	IV
Mniów	65	V	59	V	56	IV	32	IV
Bodzechów	64	V	45	IV	50	IV	31	IV
Łączna	61	V	46	IV	45	IV	45	IV
Bieliny	53	V	62	V	28	III	15	III
Krasocin	49	V	28	IV	18	III	16	III

Source: own study

Table 15 shows the communes, which in the discussed period worsened their socio-economic situation. Three cities are among them: Starachowice, Ostrowiec Świętokrzyski and Skarżysko-Kamienna, two of the urban-rural and one rural communes. One could also put among them another four urban-rural communes (Opatów, Koprzywnica, Ćmielów, Kazimierza Wielka). However, these communes in 2013 slightly improved the their position.

Table 15 Communes that in the considered period worsened their socio-economic situation

	1995		2003		2009		2013	
	place	type	place	type	place	type	place	type
Starachowice	4	II	11	III	20	III	24	III
Ostrowiec Św.	5	II	9	II	9	III	12	III
Skarżysko Kam.	7	II	7	II	14	III	22	III
Suchedniów	13	III	15	III	27	III	35	IV
Stąporków	23	IV	35	IV	47	IV	71	V
Brody	24	IV	25	IV	32	IV	36	IV

Source: own study

4 Discussion

The individual factors in different ways affect the socio-economic development of communes. Three of them seem to be decisive. These are Enterprises, Finance and social-technical Infrastructure. When inhabitants have a job, when is the atmosphere, conducive to entrepreneurship, people want to live in such commune.

Let us consider the number of communes in sextiles for individual factors in considered period and let us compare them with the number of communes in sextiles for a total aggregate measures. This is illustrated by tables 16 and 17. One can see the correlation between the number of communes in each sextiles in Table 16 and for the total aggregate measure. This is confirmed by observation, that the companies (often large tax payers), own revenues and the wise expenses as well as developed technical and social infrastructure are the key success factors in achieving socio-economic development in a commune.

Table 16 Number of communes in sextiles for factors Enterprise, Finance, Infrastructure

Enterprises					Finance					Infrastructure				
sextile	1995	2003	2009	2013	sextile	1995	2003	2009	2013	sextile	1995	2003	2009	2013
I	2	2	1	1	I	1	1	2	4	I	3	2	2	2
II	9	4	4	1	II	0	1	3	0	II	4	3	4	4
III	12	17	12	12	III	1	2	8	0	III	17	8	13	11
IV	26	27	30	22	IV	11	9	14	13	IV	28	24	23	24
V	35	34	45	43	V	44	36	39	38	V	38	36	45	48
VI	18	18	10	23	VI	45	53	36	47	VI	14	29	15	13

Source: own study

It is worth noting that the low measure of Finance factor (low own income) is not determinative for the bad situation in the commune. Examples are commune Suchedniów and Piekoszów in 2013. In Finance factor both communes are in sextile V (places 87 and 79, respectively, measures equal -0.943 and -0.708), but the total aggregate measure gives them places, respectively, 32 and 37, at the beginning of sextile IV. Suchedniów proved to be highly developed in factor Enterprise (II sextile, 11th place), and Piekoszów achieved a good result in the factor People (II sextile, 6th place).

It is very interesting to trace the development of individual communes. Most of them maintains its position in the province, oscillating with a few places up or down. This demonstrates a certain routine in managing commune. Of course, this observation does not apply to communes Sitkówka-Nowiny, Kielce and Sandomierz, which thanks to initiatives undertaken, often innovative, maintain its high position not only in the province but also in Poland.

Table 17 Number of communes in sextiles for factors People, Natural Environment and the Total Aggregate Measure

People					Natural Environment					Total Aggregate Measure				
sextile	1995	2003	2009	2013	sextile	1995	2003	2009	2013	sextile	1995	2003	2009	2013
I	5	8	4	6	I	1	10	9	11	I	3	3	4	2
II	11	9	8	4	II	22	15	17	16	II	4	6	3	4
III	19	20	13	14	III	17	30	36	33	III	10	14	20	16
IV	34	33	36	33	IV	20	15	11	12	IV	17	23	33	36
V	23	27	30	30	V	10	12	12	12	V	52	43	37	36
VI	10	5	10	15	VI	32	20	18	18	VI	18	13	5	8

Source: own study

Conclusion

The analysis of measures in the factors (Society, Enterprise, Finance, Infrastructure, Natural Environment), and of the total aggregate measures helped to establish the following conclusions:

- Decisive positive impact on the socio-economic development of communes have factors Enterprises, Finance, Infrastructure;
- Poor socio-economic development was determined by factors: Society, Enterprise, Finance;
- Factor Natural Environment has a little influence on the socio-economic development of communes.

The typology of the achieved level of socio-economic development of communes in Świętokrzyskie Province in the years 1995-2013 shows that, although the province as a whole does not belong to the highly developed, on its premises there are communes, which reached a high state of development. On the other hand, there are many communes located in the lower stage of development. Moreover, compared to 1980. (Łodkowska, 1985), these communes have not reduced the gap in level of development in relation to the leading communes.

- In 2013, in certain communes there was a favorable shift from lower to higher types in comparison to previous years (Table 14). Communes which in previous years have achieved a high level of development in the majority maintained their positions or have been relegated to a slightly lower position, for example Morawica, Masłów and Miedziana Góra;
- In 2013, in certain communes there was a negative shift of the types from higher to lower in comparison to previous years (Table 15). It is interesting that among the six such communes three of them are big cities, two are urban-rural communes, and only one is a rural commune;

- There is a state of stagnation among many communes distant from the major urban centers and in the periphery of the region. These communes become depopulated, the population is aging, and those who remained, they can not exploit the potential of these communes.

It is hoped that more often chosen on the mayors young people (eg, the mayor elected in 2014 in Starachowice is 25 years old) will bring into force their innovative ideas of developing their communes, using the immense potential of their peers (Bartosik, 2010).

The methodology used in the paper can be used to compare a level socio-economic development of counties or provinces, also in different countries. Moreover, the method of normalizing the values of characteristics in communes can be applied in order to bring to comparable values the numerical data of any other characteristics. The only condition is to have the characteristics described by numbers.

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Behavioral Diversity of Generation Y Students of Economics-Oriented Fields of Studies – Soft Skills

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Abstract

Purpose of the article The recent demographic trend introduces changes phenomena such as declining birth rate, population ageing or entry of a new generation of people in the labour market. This situation requires organizations to adapt to these changes in order to be able to effectively supplement staffing needs e.g., from unused labour reserves such as the group of graduates without experience. More emphasis on soft skill is put on graduate students in the labour market. Employers do not request only skills and knowledge connected to the field of study, but employers expect schools to teach their students social skills, too. Employers highlight following skills – ability to communicate, to express and defend own opinion, to be able to adapt to corporate culture. Each graduate is required to be flexible, be independent, capable of social interaction and communication. This European trend has been noticed in the Czech Republic as well.

Methodology/methods This paper has been prepared based on the analysis of secondary and primary data. Primary data have been collected through a questionnaire survey (n = 432 students) employing the method of self-assessment questionnaire, published in the book “Versatile Management: Dynamic Balance of Management Skills”.

Scientific aim The aim of the paper is to identify soft skills level of secondary school graduates attending an economics-oriented university.

Findings The aim of the paper is to identify the level of development of selected soft skills of secondary school graduates, commencing their studies at an economics-oriented university, which have appeared to be the key skills for future social adaptation of young people to working life and environment. These key skills have included the following soft skills – learning style, listening style, self-openness and receiving feedback, style of conflict resolution and approach to the functioning of a team.

Conclusions This research has confirmed low level of soft skills level possessed by respondents. Not even one of the respondents has demonstrated to master all five soft skills. On the contrary, the fact has been confirmed that respondents have used only one style of soft skills. Not a single one of the respondents has reached versatility in all five soft skills. The most frequently represented soft skill, as indicated by said research, has been the skill of self-openness and receiving feedback. Only 0.2% of all respondents have shown the versatility of soft skill of team co-operation; i.e., the skill, which companies demand their employees to have. Mentioned research is not the only one piece of study to confirm this fact. Companies and as well as research undertaken in the labor market in the Czech Republic point to this insufficiency as well.

Keywords: age management, Generation Y, diversity management, behavioral diversity, soft skills, versatile management, interpersonal intelligence

JEL Classification: J20, D18

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Introduction

Human resources have been increasingly important for organization in the current business environment, globalization and in the conditions of growing competitive pressure. Not, as in the past, financial resources, modern and efficient equipment and technology or high-quality strategy, but people – efficient employees – offer the main competitive advantage. The importance of human resources in an organization has been argued, for example, in the study “Aligned of the Top. How Business and HR Executives View Today’s Most Significant People Challenges – and What They’re Doing About It.”, where 85% of managers have confirmed the fundamental influence of employees on achieving the required organization’s performance (Deloitte, Economist Intelligence Unit, 2007).

Organizations, which want to survive and grow in the current environment outpace their competitors and substantially increase their added value, must attract, train and retain quality employees. At the same time, a change in the demographic situation in the society has occurred. It is a known fact that demographic situation and development of the society in recent decades have resulted in a precariously declining natality. The consequences include population ageing, crisis of pension systems and increasing difficulties in recruitment of quality employees (Velíšková, 2007). Organizations must respond to indicated demographic development and intentionally deal with employee age structure management with regard to a long-term need to maintain the numbers of employees in organizations. One of the groups, where organizations can recruit employees, is represented by young people, whether graduates without any experience or young people with limited or little experience. It became apparent already in the period around the turn of the millennium that a new generation was emerging, the “Generation Y”. Children born in the 1980s and 1990s slowly grew mature, in relatively peaceful and different conditions compared to the previous generations. These children grew up in democracy, open economy, turbulent environment and globalized world with a strong pressure of modern technologies. All a.m. influenced the character of this generation. In the next few years this generation will constitute a considerable part of working-age population. Estimated figures indicate that by 2025 40 to 60% of employees from many of the most populous countries in the world, whether from already developed or yet developing markets, will belong to the “Generation Y” and younger generations (Koudal and Chaudhuri, 2007).

In the Czech Republic only few organizations have responded to demographic changes by implementation of adequate principles of leadership and management. At the same time, global surveys show that organizations have troubles to recruit and integrate young employees. A survey of opinion of general managers has revealed that 61% of addressed general managers reported troubles to recruit and integrate young employees (PWC, 2008). Research conducted by the National Institute of Technical and Vocational Education has revealed that Czech organizations take skills and knowledge from a field of studies one has completed for granted and require schools to learn young people also social skills. Emphasis is laid on the ability to communicate, express and defend one’s opinion and flexibly adapt to corporate culture. In some non-technical professions (in particular, so-called administration professions), the requirement of previous experience on a similar position in the industry is on a declining trend. Some employers believe that work methods and responsibilities associated with a job are different in different companies, and they are willing to recruit a versatile young person with experience in a variety of areas, even if such person lacks previous experience in a similar job. Indicated shift can be observed in large but prevalently in small and medium-sized companies, where an employee is required to cover several different positions. Companies look for perspective people with promising development potential, motivated and willing to chime with corporate culture. Representatives of large companies report that the most common reason for dismissal of skilled employees is a lack of social skills. Nowadays, employers use probationary period not only to determine whether a young person could handle the job well in terms of expertise, but also how he or she will be successful in the integration into the team and use his or her initiative to contribute to the prosperity of the company. The assumption that the achievement of the highest level of education can automatically secure a good job appears not to be entirely correct. It is evident that university-educated people are subject to slightly different requirements than people with vocational education, and that upper secondary education with a school leaving examination or university education need not guarantee securing a job. With some degree of generalization the fact can be mentioned that the labor market demands the following three groups of people: versatile employees, technically educated experts and, of course, craftsmen. In all of them the market expects a certain degree of flexibility, autonomy and ability of social interaction and communication. This Europe-wide trend, of course, is also reflected in the Czech Republic. Crisis and recession, replacing a long period of economic growth, force to rethink the approach to work and role of education. The importance of initial education is driven to the background, because one has to adapt to changing conditions through life-long learning. It can be expected that in order to ensure competitiveness employees will increasingly appeal to the education system to encourage production of versatile graduates acquiring not only professional knowledge and practical skills, but also soft skills (Vojtěch and Chamoutová, 2013).

The aim of the paper is to identify the level of development of selected soft skills of secondary school graduates who have commenced their studies at an economics-oriented university which appear to be the key skills for future social adaptation of young people in working life and environment. These include the following soft skills – learning

style, listening style, self-openness and receiving feedback, style of conflict resolution and approach to the functioning of a team. Furthermore, the paper aims to validate conclusions of research studies and experts' opinions on the labor market and, at the same time, the experience of the business environment in the Czech Republic, but not only, with the level of young people's ("Generation Y") soft skills.

1 Theoretical Background

1.1 "Generation Y"

The term "Generation Y" defines a set of characteristics describing a group of people born in a certain period. Sociologists call such group a "cohort". The fact that a certain group shows similar characteristics is due to the fact that such group has been formed by the identical historical experience. Social events have the greatest impact. The term "Generation Y" appears in the pop culture, marketing (generation marketing), labor market or sociology (generation or cohort analyses). "Generation Y" is the term coined in August 1993 in the magazine "Advertising Age", describing the generation of children born between 1985 and 1995. Today, the same term often designates also the generation born between 1974 (or 1976) and 2000. "Generation Y" comes immediately after "Generation X"; nevertheless, the society indicates different years when this generation starts. "Generation Y" is understood as a successor of "Generation X" and "Generation MTV". Although the term itself is controversial and synonymous with several alternative terms such as "Millennial Generation" (or "Millennials") (Strauss and Howe, 1992), "Net Generation (Cheese, 2008), "Generation Next" (PBS NewsHour, 2010), "Echo Boomers" (Armour, 2005), "Generation Y" is generally considered as the last generation born in the 20th century. This term has been extrapolated from the United States and generally refers to young people of similar age in the Western world or the English-speaking world. Attempts have been made to call this generation as the "Millennials", to name it based on the key events and trends related to such generation. Other names include "Echo Boomers" (i.e., children born to "Boom Generation"), "Net Generation" (1st generation using ICT since childhood). "Generation Y" includes usually children of parents born in the post-war years, aka baby boomers. Since no exact time specification of the beginning and the end of "Generation Y" has been formulated, the authors use years of birth from mid-1970s to the beginning of 2000.

Table 1 Generational Timeline

Previous: Generation X (1961-1965) – (1980-1981)	Generation Y (1976-1982) – (1995-2001)	Next: Generation Z 2001 – TBA

Source: own elaboration

Discussions about various generations continue but we have to keep in mind that each individual is different. However, such statement does not mean that similar sets of behavior and opinions can not be developed among people with certain shared cultural experience. Individual characteristics may vary depending on the regional or cultural area. Nevertheless, "Generation Y" is considered the first "global" generation, mainly by reason of the Internet penetration. Generations are formed by their experience from childhood and growing up and entering the adulthood. Every generation can consciously accept or reject attitudes or actions of the previous generation.

A series of research studies into "Generation Y" has been carried out globally, with a different focus. The first research studies have been conducted in the area of generational characteristics, attitudes, opinions and circumstances influencing its members in their attitudes. In recent years, experts and recruiters in organizations abroad have paid a lot of attention to "Generation Y" and its expectations, family policy of organizations, talent management, etc. These studies report that members of "Generation Y" are used to multiculturalism in the sense of diversity of ethnic groups, religions and origin in everyday life and work. Various studies describe this generation as the most tolerant and the most idealistic of all generations. Unlike "Generation X", "Generation Y" again believes in hard work and setting goals in order to fulfill one's dreams. In team work "Generation Y" needs a strong leader who leads the team efficiently. As "Generation X" "Generation Y" is also accustomed to educational programs and expects such programs to be provided by organizations. Such programs include continuous educational programs to develop work skills (Zemke, 1999). Age management is involved in the employee age structure management.

1.2 Age Management

Age management, as a comprehensive approach, is the development of strategies, procedures and management of programs dealing with demographic changes in the labour force and designed to support age diversity in the workplace, recruitment and employment of older and younger employees, and transfer of knowledge, health and good atmosphere. The practice of age management is characterized as measures to combat age barriers or to support diversity, and as activities ensuring that every employee is given the opportunity to fulfill his/her potential and is not disadvantaged due to age (Naegelé and Walker, 2005). Age management requires a coherent approach and interventions in many areas, including changes in the perception of age, introduction of measures in the employment cycle, promotion of contacts and cooperation between generations and good working conditions in order to fully utilize and increase the potential of employees. Age management strategies can be approached in several ways; as age management of an individual, a team, an organization and the entire society:

- *Individual* – strategies focus on individual employees and concern capacity to work, health and quality of life and social relations.
- *Organization* – strategies are formulated for the organizational level and focus on maintenance of skills and labour force, transfer of knowledge, human resources management practices and changes in the organization of work and working time.
- *Society* – strategies are developed by national governments as an initiative in the areas of active life and ageing, improvement of quality of health and life, and reduction of costs for pensions, health and social care (Kociánová, 2012).

1.3 Diversity, Diversity Management

Age management operates with the concept of diversity. In managerial literature the diversity is defined as an aggregate quantity of variety among members of a particular social unit (Harrison and Sin, 2005). Presented definition stresses the relational perspective. The relational perspective means that differences are mostly interconnected and cannot be viewed as separate dimensions. Diversity in the workplace reflects diversity and plurality of people in the team in terms of their nationality, ethnicity, sex, gender, education, etc. (Greenberg, 2004). However, Katherine Klein points out that diversity cannot be reduced only to demographic categories, i.e., gender, race or age. Klein stresses that diverse attitudes, skills, knowledge and power, frequently playing the key role in the dynamism of a diversity team, must be also taken into account (Harrison and Klein, 2007).

At the organizational level diversity is defined as the degree of representation of people inside an organization belonging to various groups that are culturally significant (Cox, 1993). Diversity in a group is perceived as an aggregation of all individual attributes. The underlying assumption is that the higher demographic diversity of individuals, the more diversified team (Van Knippenberg and Schippers, 2007). Diversity at the level of a group is a grouping of people with varied group identities within the same social system (Fleury, 1999). Diversity at the individual level is often referred to as a “relational demography” because it examines how individual differences, as regards homogeneity and heterogeneity, affect the performance of teams and organizations (Tsui, Egan and O'Reilly, 1992). Generally, observable and less observable categories are distinguished (Harrison et al, 1998). Observational diversity can also be described at the visible level as differences in the race, ethnic group, nationality, gender, age, physical or cognitive abilities and, to a lesser extent, in the geographic origin, language, lifestyle or sexual orientation. These characteristics create the notions of individuals about themselves and they become less or more distinct in specific contexts (Bhadury et al., 2000). Characteristics or qualities that individuals acquire and learn later in their lives can be described at the deep level or secondary level. This level includes cultural values, personality, attitudes, religion, level of education and duration of one job. Cultural diversity increases with advancing globalization and internationalization because cultural influences shape management style, patterns of positions in the organization, behavioral characteristics and communication styles. Therefore, cultural diversity is understood as a feeling of identity, manner of behavior of the world and its use to categorize oneself and others (Ely and Thomas, 2001).

Diversity management is a managerial approach emphasizing diversity in the workplace as one of the indicators of higher work efficiency. Therefore, diversity management has become an essential part of the human resources management strategy. Keil (2007) defines diversity management as active, conscious creation of a strategic, value-oriented communication and control future-oriented process consisting in the acceptance and use of certain differences and similarities as potential driving force of an organization”. The concept of diversity management is based on the natural diversity of society. Mentioned concept reflects equal opportunities and discrimination and deals with work-life balance and age management. Diversity management is more strongly associated with cultural differences or integration of minorities and disadvantaged groups or with management of organizations, mainly in the area of human resources management (Kociánová, 2012). Sokolovský (2009) notes that the concept of diversity management differs from the “intuitive” attitude to diversity in several aspects. The main difference is that the concept of diversity management creates opportunities for

the process of adaptation, directed to the objective of integration. The concept expresses mutual adaptation of persons. For the majority such adaptation means to learn to understand the causes of differences of persons and understand their needs. For individuals the aim is to develop the ability to communicate, understand the rules and corresponding behavior. Hubbard (2004) defines diversity management as a process of planning for organization, management and support for a mix of social variety, bringing a measurable difference for the performance of an organization.

Diversity can be understood as diversity of employees in terms of certain criteria or dimensions, primary and secondary:

- *The primary (basic) dimension* has a considerable influence on the employability of a person. This includes obvious characteristics such as gender, age, race, ethnic group, mental and physical characteristics and sexual orientation.
- *The secondary dimension* plays an important role in shaping one's value orientation, expectations and creation of his or her experience. This dimension is very variable and includes communication style, socio-economic status, marital status, mother tongue, military experience, commuting, religion, learning and thinking style, geographical location, parental status, education, smoking or non-smoking and working experience. Moreover, Bedrnová and Nový (2009) add the organizational role and level, wage or salary and working style.

Furthermore, Hubbard (2004) lists four basic aspects of diversity to take into account in terms of marketing and management:

- *Workforce diversity* – diversity related to employees; includes demographic and geographic indicators, changes in the labor market, etc.
- *Behavioral diversity* – includes thinking, learning, communication style, aspirations, value system, working style and changes in attitudes and expectations of employees.
- *Structural diversity* – diversity in terms of organization's structure; refers to hierarchy, communication and cooperation of parts of organization, and relations in terms of hierarchy of organization and its parts.
- *Business diversity* – includes focus on customers, diversification of products and services, competition, globalization, and new technologies in the domestic and foreign markets (Hubbard, 2004). In practice, these diversity aspects often overlap (Eger, 2009).

1.4 Soft Skills

The term "soft skills" means how well an individual can deal not only with people and their behavior, but also with himself or herself. Previously, soft skills were called social competences. This term now designates factors such as cooperation, communication, conflict management, etc. "Soft skills are communicating, conflict management, human relations, making presentations, negotiating, team building, and other such abilities, defined in terms of expected outcomes and not as a specific method or technique such as statistical analysis" (Business Dictionary, 2009). Nicolaides defines soft skills as follows: "Soft skills are the underlying principles that trademark a company for professionalism and excellent customer service. They provide differentiation between all the cookie-cutter look-alikes and play a vital role in customer loyalty. In today's working environment, where customers and employees are demanding more, instilling the use of soft skills in your team members is something you simply can't survive without." (Nicolaides, 2002).

The above definitions give an idea what soft skills are and how important such skills are not only for success in the labor market. If we summarize the definitions, soft skills:

- are skills that help to understand ourselves and others,
- facilitate and improve cooperation with other people,
- are divided into specific skills, such as communication and presentation skills, teamwork, conflict management, etc.,
- are relevant in today's working environment and employees require them.

The above characteristics of soft skills show that soft skills are essential. It is, therefore, necessary to address them even before the commencement of employment, i.e., at universities. Of course, ideally as early as at primary and secondary schools.

2 Methods

In terms of management theory it is one of the parts of behavioral diversity. It is diversity in behavior, i.e., thinking, learning, communication style, aspirations, value system, working style and changes in attitudes and expectations of workers (Hubbard, 2004).

Primary data have been obtained by quantitative research through a questionnaire survey in 2013. The research has used self-assessment questionnaires on each of the soft skills published in the book “Versatilní vedení: Dynamická rovnováha manažerských dovedností” (Versatile Management: Dynamic Balance of Management Skills) by Karel Pavlica, Eva Jarošová and Robert B. Kaisere, who define versatility as managing diverse skills but, at the same, as the art of using them at the right level and adequately to the situation. The first self-assessment questionnaire has dealt with the *learning style*. The questionnaire includes 20 questions on four different learning styles - active, theoretical, reflective and pragmatic. 5 questions have been framed for each learning style. Respondents have marked statements that they have agreed with, reflecting their behavior. Subsequently, learning styles have been arranged by the number of statements agreed to. The highest ranking style probably represents the tactics which the respondent uses most commonly in his or her learning and development. The styles on the third and fourth places then probably represent neglected and underused procedures. When the achieved score is 0 or 1 point for a learning style, it can be considered a clear deficit. The second self-assessment questionnaire has dealt with the *listening style*. The questionnaire has included 20 questions on four different listening styles - people oriented, tasks and facts oriented, content and relatedness oriented, and time oriented. 5 questions have been formulated for each listening style. Respondents have marked the frequency of use of each statement on the following scale: 5 – always, 4 – often, 3 – occasionally, 2 – rarely, 1 – never. The listening styles have been arranged by the number of points. The highest ranking style then probably represents the dominant orientation in listening. The styles on the third and fourth places then probably represent neglected and underused approaches. When the achieved score is 5–10 points for a listening style, it can be considered a clear deficit. The third self-assessment questionnaire has dealt with *self-openness and receiving feedback*. The questionnaire has included two sets of 9 questions. The first 9 questions have focused on *self-openness*. Respondents have determined for each statement whether to agree or not. If “yes” appears three times in the statements 4–6, it means that the respondent can share his or her inner world with the others. If “yes” appears in the statements 1–3, it may reveal a deficit in this area. If “yes” appears in the statements 7–9, it may be possible that the respondent’s self-openness is excessive. The highest score then shows the preferred type of self-openness, sharing versus deficit versus excess. The following 9 questions have focused on *receiving feedback*. Respondents have determined for each statement whether to agree or not. If “yes” appears three times in the statements 4–6, it means that the respondent is able to prepare himself or herself for receiving feedback and that he or she is able to accept it. If “yes” appears in the statements 1–3, it may indicate that the respondent has little willingness to deal with feedback from others. If “yes” appears in the statements 7–9, it is possible that the respondent overacts in this area, either by putting too much pressure on others to give him or her feedback or by accepting it as a verdict or an objective fact, less as a subjective opinion of another person, the relevance of which should be decided on by the respondent. The highest achieved score then shows preferred type of receiving feedback, acceptance versus underuse versus exaggeration. The fourth self-assessment questionnaire has studied the *style of conflict resolution*. The questionnaire has phrased 25 questions on four different individual styles of conflict resolution - escapist, competitive, adaptive and compromise-making. 5 questions have been framed for each individual style of conflict resolution. Respondents have marked to what extent each statement has been true for them and in line with how they perceive themselves; the following evaluation scale has been used: 5 – completely true, 4 – rather true, 3 – neutral, 2 – rather untrue, 1 – untrue. Individual styles of conflict resolution have been arranged by the number of points. The highest ranking style then probably represents the dominant orientation in conflict resolution. If the total number is higher than 19 for any part, this result indicates a possible danger of overusing such style. On the contrary, if the total number for any part is equal to or less than 9, it may indicate that the respondent uses the style rarely. The fifth self-assessment questionnaire has focused on the *approach to the functioning of a team*. The questionnaire has included 29 questions divided into two areas, where the first 20 questions have equally focused on functional roles – task and relationship orientation. The points have been then summarized for each part of questionnaires focused on task and relationship orientation. The area, for which the highest score has been obtained, shows behavior which the respondent probably pays greater attention to or considers more important. Scores around 40 points indicate an adequate degree of mastery of the area of behavior; in contrast, scores under 30 points indicate a deficit in the area of behavior. Scores close to 50 points may indicate excess, i.e., exaggerated orientation on the area of behavior, especially in the case where less than 30 points are obtained in the other area of behavior. Where the scores are 40–45 both for task- and relationship-oriented behavior, it indicates versatility in the performance of both areas of functional roles. Moreover, the questionnaire has included 9 questions aiming to determine the style of expressing emotions – a friend, an attacker and a logician, applied in moments when a team is under pressure. Respondents have marked to what extent to agree or disagree with each questionnaire item on the following evaluation scale: 5 – agree, 4 – partially agree, 3 – neither agree nor disagree, 2 – partially disagree, 1 – disagree. The total points attributed to the first, fourth and seventh statements represent a score pointing to a tendency to behave in situations where the team is under pressure as a “friend”. The total points attributed to the second, fifth and eighth statements represent a score pointing to a tendency to behave in situations where the team is under pressure as an “attacker”. The total points attributed to the third, sixth and ninth statements represent a score pointing to a tendency to behave in situations where the team is under pressure as a “logician”. The style of emotional behavior winning the most points then probably represents respondent’s typical or preferred behavior.

The optimum is a balanced score for all styles, but also here the values are important. Scores in the range of 10 – 12 points indicate an adequate degree of emotional behavior. Scores under 9 points may indicate a deficit in using the respective emotional behavior and, in contrast, values close to 15 points may suggest an excess, i.e., overusing the respective emotional behavior (Pavlica, Jarošová and Kaiser, 2010).

The sample of respondents has been selected by intentional selection based on the following reasons:

- A growing unemployment rate of young people who are members of “Generation Y” due to their age.
- A growing unemployment rate of graduates of economics-oriented universities.
- Focus on students of the 1st year of economics-oriented universities because their peers have entered the labor market with secondary education. At the same time, students of the 1st year will be only little influenced by university studies and, therefore, they should have the same level of soft skills development.

The sample has consisted of students of the 1st year of full-time studies of the Economics and Management and Quantitative Methods in Economics at the Faculty of Business and Management, Brno University of Technology. According to the “Apollo” information system of the Faculty of Business and Management in the academic year 2012/2013 481 active students studied the Economics and Management study program and 10 active students the Quantitative Methods in Economics study program. The sample, therefore, consists of 491 students of the 1st year of full-time studies. The sample of respondents represents all students participating in the survey and submitting completed questionnaire. Totally 420 (86%) students of the 1st year of full-time studies at the Faculty of Business and Management have completed mentioned questionnaire..

Research questions: What is the level of development of soft skills in young people (Generation Y)?

H₀: Young people – “Generation Y” – do not exhibit full development of soft skills.

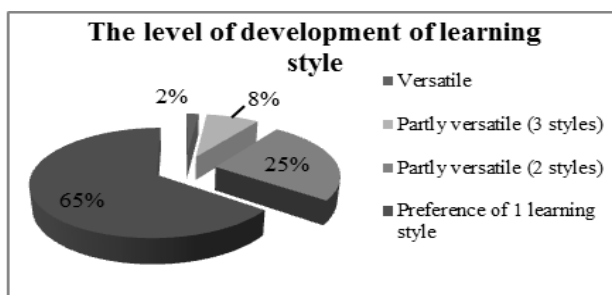
H₁: Young people – “Generation Y” – do exhibit full development of soft skills.

3 Results

This chapter presents and evaluates the results of questionnaire survey aimed to identify the level of development of selected soft skills in respondents. The following soft skills have been selected as key skills for a future social adaptation of young people in their working life and environment – learning style, listening style, self-openness and receiving feedback, style of conflict solving, and approach to the functioning of a team.

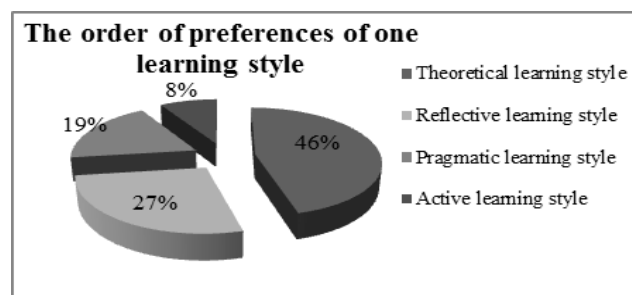
3.1 Learning Style

The research has showed that 1.85% of respondents prefer all four learning styles equally. These respondents have achieved a full versatility (development) of the learning style. Preference for three or two learning styles could be considered partial versatility of the learning style. 8.10% of respondents have showed partial versatility and preference for 3 learning styles. The individual combinations have received 2.55–1.62%. 25.24% of respondents have showed partial versatility and preference for 2 learning styles. The individual combinations have received 12.5–1.16%. The most important combination is that of theoretical and reflective learning style, preferred by 12.5% of respondents. Other combinations are preferred by less than 4% of respondents. 64.82% of respondents prefer only one learning style (Figure 2).



Source: own elaboration

Figure 1 The Level of Development of Learning Style



Source: own elaboration

Figure 2 The Order of Preferences of One Learning Style

According to the principle of versatility styles on the third and fourth places probably represent neglected and underused approaches. The underuse of the learning style in the 3rd place applies to 72.22% of respondents. 42.13% of respondents underuse one learning style, of which 11.57% underuse pragmatic style, 10.88% active style, 10.42% theoretical style, and 9.26% reflective style. In the third place 24.77% of respondents underuse two learning styles. The frequency of individual combinations of underuse of two learning styles has oscillated between 6.48 and 2.55%, of which the most underused combination has been theoretical and reflective learning styles (6.48%).

In the third place 5.33% of respondents underuse three learning styles. The frequency of individual combinations of underuse of three learning styles has oscillated between 1.39 and 1.16%, of which the most underused combination has been the various combinations of four learning styles –active, pragmatic, reflective and theoretical styles (1.39%). The underuse of the learning style in the 4th place applies to all 100% of respondents. Basically, it is the least preferred learning style. One style is underused by 55.13% of respondents, of which 22.92% underuse active style, 14.12% underuse pragmatic style, 9.99% underuse reflective style, and 8.10% of respondents underuse theoretical style. 31.71% of respondents underuse two learning styles in the fourth place. The frequency of individual combinations of two learning styles has been between 15.74 and 1.85%, of which the most underused combination has been active and pragmatic learning style (15.74%). 11.34% of respondents underuse three learning styles in the fourth place. The frequency of individual combinations of underused three learning styles has been between 4.63 and 1.39%. 1.85% of respondents underuse all learning styles.

When the achieved score is 0 or 1 point, it can be considered a clear deficit in the learning style. A deficit in the learning style occurs in 62.96% of respondents. A deficit in one learning style has been exhibited by 32.86% of respondents – 11.57% active style, 9.95% pragmatic style, 6.02% theoretical style and 5.32 reflective style. 21.99% of respondents have exhibited a deficit in two learning styles. The most important combination of a deficit two learning styles has been active and pragmatic style, exhibited by 10.88% of respondents. The frequency of other combinations ranges between 2.78 and 1.38%. 6.72% of respondents have exhibited a deficit in three learning styles. The frequency of individual combinations ranges between 2.55 and 0.46%. A deficit in all four styles has been exhibited by 1.39% of respondents.

Table 2 A Summary of Results of the Level of Development of Respondents' Learning Style

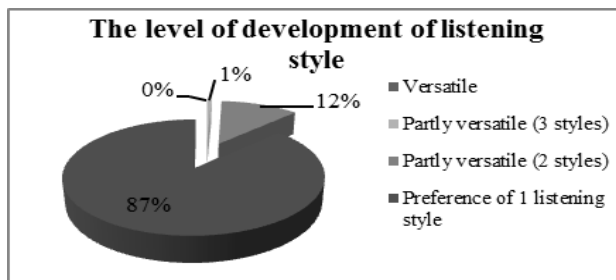
VERSATILITY LEVEL		Learning style (1x4)
FULL		1.9%
PARTIAL	1x3	8.1%
	1x2	25.2%
PREFERENCE OF 1 STYLE		64.8%
UNDERUSE, STYLE IN THE 3RD PLACE	1x1	42.1%
	1x2	24.8%
	1x3	5.3%
UNDERUSE, STYLE IN THE 4TH PLACE	1x1	55.1%
	1x2	31.7%
	1x3	11.3%
DEFICIT	1x1	32.9%
	1x2	21.9%
	1x3	6.7%

Source: own elaboration

3.2 Listening Style

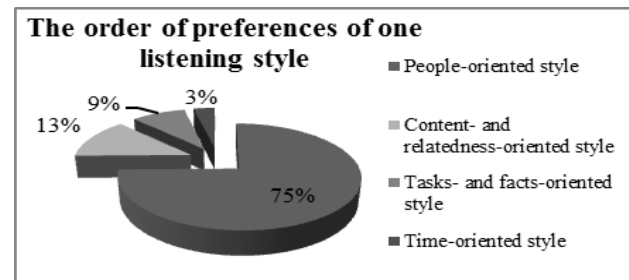
The research has showed (revealed?) that no respondents prefer all four listening styles equally. According to the principle of versatility no respondent has achieved a balanced application of all four styles. Preference to three and two styles could be considered partial versatility of the listening style. Partial versatility, i.e., a combination of three listening styles, has been achieved by 0.69% of respondents, and the most preferred combination of styles has been orientation on tasks and facts, content, links and time (0.46%). Furthermore, partial versatility, i.e., a combination of two listening styles, has been achieved by

11.79% of respondents, and the most preferred combination of styles has been orientation on people, content and links (4.86%). 87.04% of respondents prefer only one listening style (Figure 4).



Source: own elaboration

Figure 3 Level of Development of Listening Style



Source: own elaboration

Figure 4 Order of Preferences of One Listening in Respondents

Listening styles in the third and fourth places may indicate marginalization and underuse of the respective approach. In the third place, 76.16% of respondents underuse one listening style, of which 32.41% that oriented on tasks and facts, 25.23% that oriented on content and links, 13.66% that oriented on time, and 4.86% that oriented on people. 21.36% of respondents underuse two listening styles in the third place. The frequency of individual combinations of two listening styles is between 7.78 and 1.38%, of which the most underused combination is orientation on tasks and facts, and content and relatedness (7.87%), followed by combination of orientation on tasks and facts, and time (5.09%). 1.62% of respondents underuse three listening styles in the third place. The frequency of individual combinations of underuse of three listening styles oscillates between 0.93 and 0.69%; two combinations, of which the more underused ones have been tasks and facts, content and links, and time (0.93%). In the fourth place 88.66% of respondents underuse one listening style, of which 59.95% that oriented on time, 15.51% that oriented on tasks and facts, 10.42% that oriented on content and links, and 2.78% that oriented on people. 9.49% of respondents underuse two listening styles in the fourth place. The most commonly underused combination has been the combination of orientation on tasks and facts, and time – 4.17% of respondents. Other combinations are underused by 2.08–0.23% of respondents. A combination of three listening styles is underused by 1.38% of respondents, of which the most underused combination has been orientation on tasks and facts, content, links and time (0.69%), i.e., they absolutely prefer only one listening style, namely the style oriented on people.

A clear deficit in the listening style, i.e., where the score achieved by respondents is 5–10 points, has been seen in 20.37% of respondents. 79.63% of respondents have not exhibited deficit in listening. A deficit in one listening style has been exhibited by 19.44% of respondents, of which 17.36% have exhibited a deficit in orientation on time, 1.16% a deficit in orientation on content and links, 0.69% have exhibited a deficit in orientation on tasks and facts, and 0.23% have exhibited a deficit in orientation on people. 0.69% of respondents have exhibited a deficit in a combination of two listening styles. These are orientation on tasks and facts, and time. 0.46% of respondents have exhibited a deficit in all four listening styles.

Table 3 Summary of Results of the Level of Development of Respondents' Listening Style

VERSATILITY LEVEL		Listening style (1x4)
FULL		0%
PARTIAL	1x3	0.7%
	1x2	11.8%
PREFERENCE OF 1 STYLE		87.0%
UNDERUSE, STYLE IN THE 3rd PLACE	1x1	76.2%
	1x2	21.4%
	1x3	1.7%
UNDERUSE, STYLE IN THE 4th PLACE	1x1	88.7%
	1x2	9.5%
	1x3	1.38%
DEFICIT	1x1	19.4%
	1x2	0.7%
	1x3	0.5%

Source: own elaboration

3.3 Self-openness and Receiving Feedback

The research has been divided into two parts, one dealing with self-openness and another one dealing with receiving feedback.

Self-openness

According to the principle of versatility 54.40% of respondents have achieved full self-openness and ability to share their world with others. This statement means that 45.60% of respondents have not achieved full self-openness, i.e., obtaining less than three points. 25.93% of respondents have not exhibited a deficit in self-openness. A certain deficit in self-openness has occurred in 74.07% of respondents. At the same time, 15.97% of respondents have not exhibited excessive self-openness. 84.03% of respondents have achieved excessive self-openness.

The variant, for which a respondent has obtained the most points, is considered the preferred type of self-openness. 62.03% of respondents have showed orientation on one type of self-openness, the order of preferences being as follows: sharing one's inner world with others 41.20%, deficit in self-openness 13.19% and excessive self-openness 7.64% of respondents.

Receiving feedback

According to the principle of versatility 49.07% of respondents can receive feedback appropriately. These respondents can "tune" themselves to its receiving. 50.93% of respondents have not achieved full acceptance of feedback. 67.59% of respondents have exhibited little willingness to deal with feedback. 32.41% of respondents have exhibited unwillingness. Possible excessive demanding of feedback, either by putting too much pressure on others to give him or her feedback or by accepting such feedback as a verdict or an objective fact, less as a subjective opinion of another person, the relevance of which should be decided on by the respondent, has been found in 63.89% of respondents. 36.11% of respondents have not exhibited excessive demanding of feedback.

The variant, for which a respondent has obtained the most points, is considered the preferred type of receiving feedback. 75.23% of respondents have exhibited orientation on one kind of receiving feedback, and the order of preferences is as follows: acceptance of feedback 69.21%, unwillingness to deal with feedback 4.17% and excessive demanding of feedback 1.85% of respondents.

Self-openness and receiving feedback

According to the principle of versatility the use of types of self-openness and the manner of receiving feedback should be balanced. In the relationship between self-openness and receiving feedback a versatile individual should share self-openness and accept feedback. This combination has been achieved by 31.25% of respondents.

Table 4 Summary of Results of the Level of Development of Self-openness and Receiving Feedback in Respondents

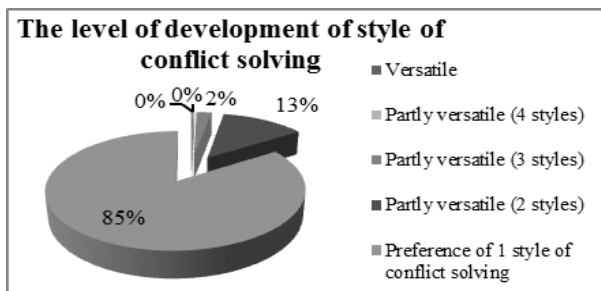
VERSATILITY LEVEL	SELF-OPENNESS	VERSATILITY LEVEL	RECEIVING FEEDBACK
SHARING	54.4%	ACCEPTANCE	49.1%
DEFICIT	74.1%	UNWILLINGNESS	67.6%
EXAGGERATED	84%	EXAGGERATED DEMANDING	63.9%

Source: own elaboration

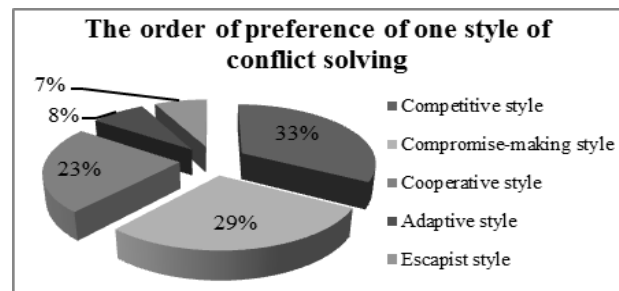
3.4 Style of Conflict Resolution

Thhas resolution,,these responsdents have achieved versatility. Partial versatility, i.e., a combination of four styles of conflict resolution, has been achieved by 0.23% of respondents. This partial versatility has included a combination of competitive, adaptive, compromise-making and cooperative styles of conflict resolution. Partial versatility, i.e., a combination of three styles of conflict resolution, has been achieved by 2.31% of respondents. The frequency of individual combinations of three styles of conflict resolution has ranged between 0.69 and 0.23% of respondents. Partial versatility, i.e., a combination of two styles of conflict resolution, has been achieved by 13.42% of respondents. This partial versatility has included combination of competitive and cooperative styles – 4.17% of respondents, and compromise-making and cooperative styles – 2.55% of respondents. The frequencies of other combinations have ranged between 1.85 and 0.23%.

83.55% of respondents prefer only one style of conflict solving (Figure 6).



Source: own elaboration



Source: own elaboration

Figure 5 Level of Development of Style of Conflict Resolution of Respondents

Figure 6 Order of Preferences of One Style of Conflict Resolution by Respondents

81.02% of respondents have showed an excessive use of a style of conflict resolution. 37.74% of respondents excessively use one style of conflict resolution. The order of excessively used styles is as follows: competitive 15.28%, compromise-making 10.42%, cooperative 7.64%, adaptive 2.78%, and escapist style 1.62% of respondents. 27.56% of respondents excessively use two styles of conflict resolution. It is a combination of competitive and cooperative styles (9.26% of respondents), compromise-making and cooperative styles (7.87%), and competitive and compromise-making styles (3.47%). The frequency of other combinations of excessive use of two styles of conflict resolution ranges between 1.62 and 0.23%. 10.85% of respondents excessively use three styles. The most frequent combination is that of the competitive, compromise-making and cooperative styles (4.86% of respondents). The frequency of other combinations of excessive use of three styles of conflict resolution ranges between 1.85 and 0.23%. 4.86% of respondents excessively use four styles of conflict resolution, of which 3.24% excessively use competitive, adaptive, compromise-making and cooperative styles. 1.62% of respondents excessively use escapist, adaptive, compromise-making and cooperative styles.

14.58% of respondents have showed little use of styles of conflict resolution. 0.62% of respondents have exhibited little use of two styles of conflict resolution. These two styles represent a combination of escapist and adaptive styles. 13.89% of respondents have exhibited little use of one style of conflict resolution, of which 11.81% use escapist style, 1.16% adaptive style, 0.69 cooperative style and 0.23% of respondents use competitive style.

Table 5 Summary of Results of the Level of Development of Respondents' style of Conflict Resolution

VERSATILITY LEVEL		Style of conflict resolution (1x5)
FULL		0.2%
	1x4	0.2%
	1x3	2.3%
	1x2	13.2%
PREFERENCE OF 1 STYLE		
EXCESSIVE USE	1x1	83.6%
	1x2	37.7%
	1x3	27.6%
	1x4	10.9%
	1x5	8.9%
LITTLE USED	1x1	13.9%
	1x2	0.6%

Source: own elaboration

3.5 Approach to the Functioning of a Team

The research has been divided into two parts, one dealing with behavior in a team and another dealing with emotional expressions.

Behavior in a team

14.35% of respondents have achieved versatility in the performance of both functional roles, i.e., a balanced use of both approaches, to an adequate degree.

Preferred behavior in a team for 53.70% of respondents is relationship-oriented behavior and for 37.96% of respondents task-oriented behavior. 8.10% of respondents prefer both behaviors equally.

79.63% of respondents master the areas of behavior to an adequate degree. 40.74% of respondents use both types of behavior, i.e., task- and relationship-oriented ones, to an adequate degree. 20.14% of respondents use task-oriented behavior to an adequate degree, and 18.75% of respondents use relationship-oriented behavior to an adequate degree. 20.37% of respondents do not exhibit an adequate degree of team behavior.

A deficit, i.e., little use of a type of behavior in the area, has been found in 18.29% of respondents. A deficit in both types of behavior has been found in 3.94% of respondents. A deficit in task-oriented behavior has been exhibited by 7.41% and in relationship-oriented behavior by 6.94% of respondents. In contrast, an excess, i.e., exaggerated application of a type of behavior, has been found in 30.32% of respondents. An excess in two areas of behavior has been exhibited by 8.10% of respondents. 15.51% of respondents have showed an excess in task-oriented behavior, and 6.71% in relationship-oriented behavior.

Emotional expressions

Versatility of kinds of emotional expressions, i.e., an optimal use of all three approaches, has been achieved by 1.85% of respondents.

A use of two emotional expressions could be considered a partly versatile development. Two kinds of emotional expression are preferred by 12.96% of respondents, of which friend and logician by 6.48%, attacker and logician by 3.70% and friend and attacker by 2.78% of respondents.

One kind of emotional expression is preferred by 84.95% of respondents, of which friend by 66.43%, attacker 9.95% and logician 8.56% of respondents.

80.32% of respondents master emotional expressions to an adequate degree. 11.57% of respondents use all three emotional expressions to an adequate degree. Two kinds of emotional expression are used by 29.87% of respondents, of which attacker and logician by 12.27%, friend and logician by 10.42% and friend and attacker by 7.18% of respondents. One kind of emotional expression is applied to an adequate degree by 38.89% of respondents, of which friend by 15.51%, logician by 13.19% and attacker by 10.18% of respondents.

A deficit, i.e., little use of emotional expression, is exhibited by 70.14%. A deficit in all three emotional expressions has been exhibited by 3.01% of respondents. A deficit in two emotional expressions has been exhibited by 28.46% of respondents. The most frequent combination is attacker and logician, 24.07% of respondents. A deficit in one kind of emotional expression has been exhibited by 38.66% of respondents, of which attacker by 22.69%, logician by 12.27% and friend by 3.70% of respondents.

On the contrary, an excess, i.e., exaggerated application of a kind of emotional expression, has been exhibited by 29.17% of respondents (126). An excess in all three kinds of emotional expressions has been found in 0.23% of respondents. An excess in two kinds of emotional expressions has been found in 2.54% of respondents. The most frequent combination is friend and logician, 1.85% of respondents. An excess in one kind of emotional expression has been exhibited by 26.39% of respondents, of which friend by 22.92%, attacker by 1.85%, and logician by 1.62% of respondents.

Behavior and emotional expressions in a team

According to the principle of versatility both styles of behavior and all three kinds of emotional expression are used by 0.23% of respondents. Partial versatility in applying both styles of behavior and two kinds of emotional expression is used by 0.46% of respondents. Partial versatility in combination of two and one kind has been achieved by 19.91% of respondents, of which 3.48% prefer combination of task-oriented behavior and friend and logician, 2.78% prefer combination of relationship-oriented behavior and friend and logician and 2.32% of respondents prefer combination of task-oriented behavior and attacker and logician. The frequency of other combinations ranges between 1.62 and 1.16%. A combination of one kind of behavior and emotional expression is preferred by 80.72% of respondents, of which 37.82% prefer combination of relationship-oriented behavior and friend, 22.51% task-oriented behavior and friend, 5.10% relationship-oriented behavior and attacker and other combinations are preferred by 4.64–3.71% of respondents.

Table 6 Summary of Results of the Level of Development of Team Cooperation

VERSATILITY LEVEL		BEHAVIOUR IN A TEAM	VERSATILITY LEVEL		EMOTIONAL EXPRESSIONS
VERSATILE		14.4%	VERSATILE		1.9%
ADEQUATELY (1x2)		40.7%	ADEQUATELY	1x3	11.6%
PARTIAL	task-oriented	20.1%		1x2	29.9%
	relationship-oriented	18.8%		1x1	38.9%
EXCESS	full	8.1%	EXCESS	1x3	0.2%
	task-oriented	15.5%		1x2	2.5%
	relationship-oriented	6.7%		1x1	26.4%
DEFICIT	full	3.9%	DEFICIT	1x3	3%
	task-oriented	7.4%		1x2	28.5%
	relationship-oriented	6.9%		1x1	38.7%

Source: own elaboration

4 Discussion

The research on soft skills has repeatedly confirmed that young people, classified within a demographic group, are diverse. Diversity at the level of individual (personality), i.e., behavioral diversity, has been confirmed. At the same time, common prevalent characteristics in the area of soft skills can be traced in a certain part of the sample of respondents. On average, 52.50% of respondents have preferred these characteristics. It must be noted that in the case of learning style and style of conflict resolution, the preference of the particular style has not been so clear-cut.

Table 7 Prevailing Profile of Respondents' Soft Skills

CHARACTERISTICS	PREFERRED STYLE	FREQUENCY	CHARACTERISTICS
Learning style	theoretical	29.63%	Orientation on thinking, judgment, work with abstract concepts and drawing general conclusions. Systematic comparison of new and previous findings.
Listening style	people-oriented	65.05%	In their communication and dialogue they concentrate mainly on creation and maintenance of positive interpersonal relationships.
Style of conflict solving	competitive	27.55%	Manifested by an effort to achieve one's objectives regardless of the interests or objectives of others.
Self-openness	sharing	41.20%	They can share their inner world.
Receiving feedback	acceptance	69.21%	They can reasonably "tune" themselves to receiving feedback and they can accept it.
Teamwork - behavior	relationship-oriented	53.70%	They contribute to the creation and maintaining of a positive atmosphere.
Teamwork – emotional expressions	friend	66.43%	They express positive and friendly emotions, try to help, look for allies. Advantage – reduction of tension and maintaining the unity of a team. Disadvantage – suppression of necessary exchanges of views.

Source: own elaboration

The results of research in the area of versatility of soft skills prove that young people have not fully developed selected soft skills. According to the principle of versatility 1.85% of respondents have preferred all four learning styles equally. 8.10% of respondents have showed partial versatility and preference of 3 learning styles. 25.24% of respondents have achieved partial versatility and preference of two learning styles. Partial versatility of learning style has been exhibited by 33.34% of respondents. 64.82% of respondents have preferred only one learning style.

Therefore, no respondent has achieved a balanced application of all four styles. Partial versatility, i.e., a combination of three listening styles, has been achieved by 0.69% of respondents. Also, partial versatility, i.e., a combination of two listening styles, has been achieved by 11.79% of respondents. Partial versatility of listening style has been exhibited by 12.48% of respondents. 87.04% of respondents have preferred only one listening style.

54.40% of respondents have achieved full self-openness and ability to share their world with the others. According to the principle of versatility 49.07% of respondents can receive feedback appropriately. They can "tune" themselves to its receiving. As far as self-openness and receiving feedback is concerned, a versatile individual should share self-openness and accept feedback. This combination has been achieved by 31.25% of respondents.

A balanced application of all five styles of conflict resolution has been achieved by 0.23% of respondents. Partial versatility, i.e., a combination of four styles of conflict resolution, has been achieved by 0.23% of respondents. Partial

versatility, i.e., a combination of three styles of conflict resolution, has been achieved by 2.31% of respondents. Partial versatility, i.e., a combination of two styles of conflict resolution, has been achieved by 13.42% of respondents. Partial versatility of style of conflict resolution has been, therefore, exhibited by 15.96% of respondents. 83.55% of respondents have preferred only one style of conflict resolution.

14.35% of respondents have achieved versatility in the performance of both functional roles (relationship-oriented, task-oriented), i.e., balanced use of both approaches, to an adequate degree. Versatility of kinds of emotional expressions, i.e., optimal use of all three approaches, has been achieved by 1.85% of respondents. According to the principle of versatility both styles of behavior and all three kinds of emotional expression are used by 0.23% of respondents.

Table 7 Versatility of Selected Soft Skills in Respondents

Soft skill	Versatile	Partially versatile
Learning style	1.85%	33.34%
Listening style	0%	12.48%
Style of conflict solving	0.23%	15.96%
Self-openness and receiving feedback	31.25%	-
Teamwork	0.2%	-
Average	6.71%	20.59%

Source: own elaboration

For these reasons the hypothesis H_0 has been confirmed: Young people do not exhibit full development of soft skills. Versatility in all 5 soft skills has not been achieved by any respondent. In addition, these results confirm the conclusions of research studies and opinions of experts on the labor market and, at the same time, the experience of the business environment in the Czech Republic that young people have low levels of soft skills, which can cause problems with their social adaptation in the workplace. From the perspective of multiple intelligence theory, formulated in 1983 by the American psychologist Howard Gardner, we are referring to interpersonal intelligence, sometimes also known as social intelligence, which is also related to the ability to record and to distinguish between the expressions of other people, perceive the intentions and desires of others and act on the basis of this knowledge. This part of an individual's personality is developed by social interaction with other people and the environment, i.e., mostly family, school and social activities of a community.

Conclusion

The results of undertaken research have revealed that young people are diverse within their demographic group also in terms of the level of development of soft skills. Diversity at the level of individual (personality), i.e., behavioral diversity, has been confirmed. At the same time, common prevalent characteristics in the area of soft skills can be traced in a certain part of the sample of respondents. In average 52.5% of respondents prefer only one style of soft skills. This outcome confirms the theoretical principles of diversity claiming that every individual is unique.

These findings confirm the appropriateness of applying the principles of diversity and diversity management in the personnel work with young employees in their integration and adaptation to company structures. Diversity management is a managerial approach emphasizing diversity in the workplace as one of the indicators of higher work efficiency. Therefore, diversity management has become an essential part of the human resources management strategy. Brodský and Teturová (2008) argue that diversity management brings employers a competitive advantage based on a better use of each individual's potential. However, it is necessary to understand this diversity as an advantage in mutual cooperation in a team. People with different life experience, different backgrounds, knowledge or interests may enrich teamwork very much. Diversity management is viewed, in the life of organizations, as a competitive advantage contributing to a greater diversity of employees and to tolerance to personal differences. Diversity enables, regardless of irrelevant factors, selection and maintenance of quality staff, has positive impact on teamwork, on team performance and is a benefit for customers. Diversity of staff may allow expansion of activities of the organization and the group of customers.

Moreover, carried-out research has showed that young people do not exhibit full development of soft skills. Versatility, i.e., balanced use of all 5 monitored soft skills, has not been achieved by any respondent. 6.71% of respondents have achieved the average versatility in four soft skills, with the exception of the style of listening. Exceptional soft skill is self-openness and receiving feedback, where 31.25% of respondents have reached versatility, in other words balanced style of use. This fact confirms the conclusions of research studies and opinions of experts on the labor market and at the same time the experience of the business environment in the Czech Republic that young people have low levels of soft skills, which can cause problems with their social adaptation in the workplace.

. These findings and facts prove that changes in the system of education and work with young people within the framework of their training for future employment must be demanded.

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Encouraging factors to select an international destination where improving skills

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Abstract

Purpose of the article Countries and organizations are competing globally to attract better international growing talents they need and retain those that contribute to development in a changing business environment. The purpose of this paper was to find out what factors motive and encourage to select an academic destination where improving employable skills.

Methodology/methods This research focused on universities since they are the basis for growing talent and specialization. Particularly, we performed a multiple regression analysis of pull factors of the higher education system of Spain for mobile students at bachelor and master studies.

Scientific aim The aim of this work is to explain what factors are the most important when choosing a college and analyze whether these factors differ when comparing undergraduate and master studies, and particularly when comparing mobile students from different home regions.

Findings Results showed that the wide range of academic offer was the main attract factor for bachelor' students from any source. However it was the prestige of academic institutions at master level. Taking in account imbalances by source regions, at bachelor level the second factor was the prevalence of foreigners in the receiving region. At master level, for mobile students of Latin America the main factor was the prestige of institutions. For European mobile students, the main reason was the tuition fees.

Conclusions There are different pull factors to choose an international academic destination. These factors differ according to the purpose of the training (bachelor or master), and also these differences became more acute when the origins of students were considered.

Keywords: migration pull factors, mobile students, academic offer, prestige of academic institutions, foreigners stock, tuition fees

JEL Classification: F2, F22

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Introduction

In a globalized environment to have highly skilled workers is critical. Further, youth unemployment has become an important problem at international level, so acquiring skills and knowledge is decisive to compete at international level, especially in the case of students (Daugėlienė, 2007; Heid and Larch, 2012; Fosslund, 2013; Kvedaraitė et al., 2015).

Moreover, there is a global competition to attract and retain higher skilled employees in order to improve economics development (Hawthorne, 2010; Docquier and Lodigiani, 2010; Arslan et al., 2014).

Thus, to have an international education is a valuable asset for workers, companies and country's economics (Becker, 1971; Beržinskienė et al., 2014).

Therefore this research focused on the academic mobility since it constitutes the basis for improving the talent and skills. The purpose of this paper was to find out what factors better explain the selection of an academic destination where improving employable skills.

This research is focused on specific factors that are linked to students' migration, such as the academic offer, tuition fees, the potential networks measured by the stock of foreign population, and also the prestige of the academic institutions.

So this research attempts to confirm specific factors that explain the students' migration with the purpose of knowing the determining reasons when students decide about an academic destination, and to understand how a receiving country could be more competitive and attractive for highly skilled workers, and also to show those factors that should be more relevant for companies that want to improve their human capital's skills.

In the following sections we performed a theoretical and empirical analysis of those factors explaining students' mobility to Spain. Research pays attention to the level of bachelor and master, analysing similitudes and differences between both levels and also between different students' origins.

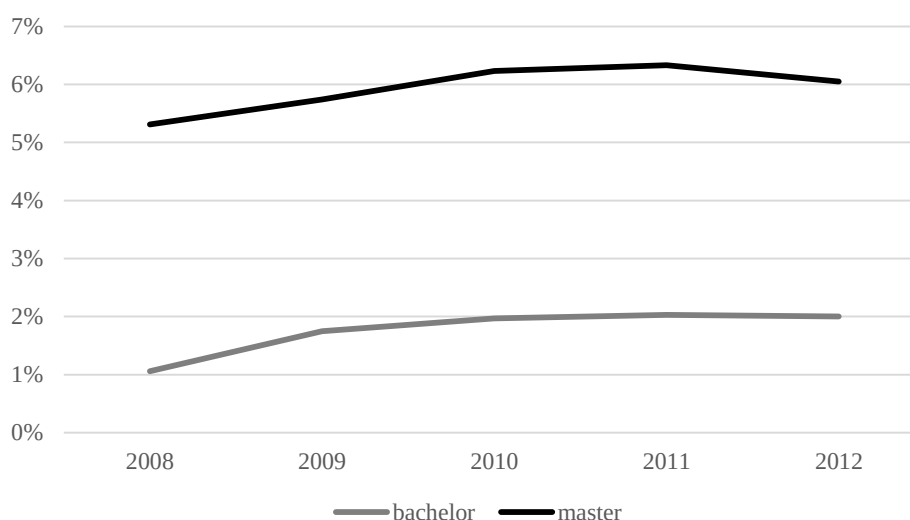
1 Background

An international education could be considered as an investment that lead to labour opportunities for future workers, competitive advantages for companies and, subsequently, economic progress for countries (Becker, 1971; Mixon, 1992; Fosslund, 2013).

Globalization and convergence of education systems, such as the European space of Higher Education, have favoured students' mobility (Gürüz, 2008; Docquier and Lodigiani, 2010; Kvedaraitė et al., 2015). However, there are many differences between regions because of changes in economic circumstances, the different initiatives, situations and conditions of each academic institution (Becker, 1971; Ciarniene et al., 2009).

Further, in a time of higher competition when countries and organizations are trying to attract international highly skilled work-force it is very important knowing those factors that encourage to select a destination.

Overall, mobile students has grown in the last recent years (Graph 1).



Source: OECD, 2014

Graph 1 Evolution of mobile students: Bachelor and Master

A more global and severe international competition in the labor market requests talented labor force, therefore an international education would enable potential better jobs and salaries (Becker, 1971; Lien and Wan, 2005; Fossland, 2013; Arslan et al., 2014). In this sense, the case of economics crisis in Spain with one of the higher unemployment rate of Europe, especially youth unemployment, demonstrated the unemployment rate was the lowest for top educated workers. Therefore students and workers move to other country seek improving their education level.

In addition, tertiary education is very important, especially for receiving countries, since it offers the possibility of recruiting highly skilled workers (Marginson and Considine, 2000; Beržinskienė et al., 2014), and also getting extra incomes from foreigners who come for training (Mixon, 1992; Daugėlienė, 2007; Hawthorne, 2010;), and a much better prepared labour force (OECD, 2014).

Therefore, this research analysed mobile students and encouraging factors to move from one country to other in order to improve their skills.

Selection of an academic destination depends of several reasons, especially economics (Mihi-Ramírez and Kumpikaitė, 2013; Ngoma and Ismail, 2013), but there are specific factors in the case of academic migration.

Among these factors literature pointed up the academic offer of host country, since the mobile students seek to compensate the lack of academic programmes or their quality in the native country moving abroad (OECD, 2014). It depends on the number of master and bachelor degrees offered in the host country. Having more academic alternatives encourage to migrate (Tuckman, 1970; Fossland, 2013).

Other factor is the tuition fees that vary according to the university, the country and over the time (Tuckman, 1970). The price per ECTS credit could be a pull factor for mobile students (Tuckman, 1970; Mixon, 1992).

The existence of previous networks of migrants also encourage mobile students to select a destination, since it implies more help and better information there (Dreher and Poutvaara, 2006; Docquier and Lodigiani, 2010). It could be measured by the rate of foreign population of a region.

In addition, the quality of academic institutions and its prestige are also an important factor to attract mobile students. It is measured by the number of universities of the receiving country that belong to the international academics rankings such as ARWU, QS and THE. The prestige of university could mean better labour options and wages (Mixon, 1992).

2 Methodology

A regression model explained the number of mobile students coming to perform undergraduate/bachelor (EEG, hereafter) and Master (EEM, here in after). The sample is Spain, a country with a well-developed education system.

It is important to analyze these relationships to test what predictors are more relevant to explain EEG and EEM. It reflects what is more important for mobile students when they choose an academic intuition, checking if those variables differ when comparing undergraduate and master, and particularly when comparing students by region of origin.

Methodology was a multiple regression model, which is the most common approach for empirical analysis in economics and other social sciences (Wooldridge, 2002; Harris, 2014), where an equation is constructed in which the variable you are interested predict or estimate (dependent variable Y) is related to the explanatory variables ($X_1, X_2, \dots, X_k$) by the following expression in matrix form: $\bar{y} = X\bar{\beta} + \bar{u}$

The error term or perturbation represents all those factors other than X , affecting the variable Y , which cannot be observed. On the perturbation assumptions mean 0 ($E(\bar{u}) = \bar{0}$), constant variance and uncorrelated ($Var(\bar{u}) = \sigma^2 I, \sigma^2 \text{constante}$) is assumed.

Furthermore, the model has the following characteristics (Harris, 2014):

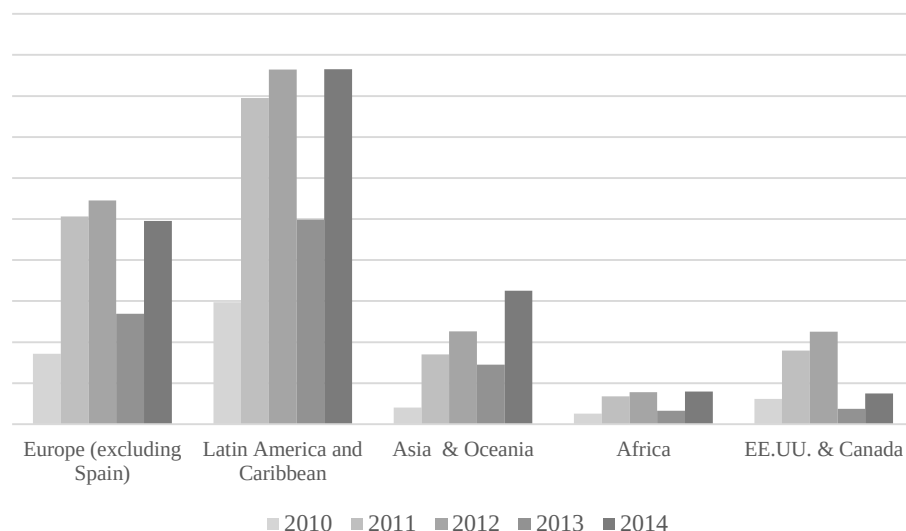
- The model is stochastic;
- The model is linear;
- The model coefficients ($\beta_1, \beta_2, \dots, \beta_k$) are constant over time;
- There is a causal relationship from the explanatory variables to endogenous or explained variable;
- The X variables are not linearly dependent;
- The variables X are deterministic;

The model will enable to predict Y based on the explanatory variables and determine which variables are relevant to explain it, at the same time it let us to analyze how this variable is modified when an explanatory variable changes, keeping constant the effect of other variables explanatory model.

The aim is to estimate (using the sample to determine the specific values) the coefficients. The specific estimation method is the Ordinary Squared Minimums that guarantees that obtained estimations minimize the sum of squared residuals, defined as the subtraction between the true value of the dependent variable and its value estimated through

regression model. The value of the coefficients is what lets us to know which variables are important, and how it influence what interests us.

The crosssectional sample includes all universities in Spain dedicated to face to face education (69 in total: 22 private and 47 public) for the course 2013-2014, where the variable of interest is the number of mobile students enrolled in first year of bachelor and master. More than half (56%) of mobile students who come to study a degree to Spain came from the rest of European countries (Graph 1); over a quarter (28%) of Latin America, and the rest from USA, Africa and Asia (OECD, 2014). In master the first two positions are reversed, since Latin America represents 47% of the students, followed by 28% of students from the rest of Europe, and the rest far behind. Therefore, in the analysis was exclusively considered these two regions of origin: Europe and Latin America (Graph 2).



Source: Ministry of Education of Spain, 2015

Graph 2 Evolution of mobile master students of Spain by source

Thus, as explained variables we have the total number of mobile students in grade/bachelor (ETG) and master (ETM), which includes the total number of students coming to Spain from the five regions considered (Europe except for Spain, Latin-America, USA, Africa and Asia) and the same variables but only considering mobile students from the rest Europe (EEG and EEM) and from Latin America (ELG and ELM).

As explanatory variables we will consider the following 4:

1. Academic offer (EDIT) is a quantitative variable that reflects the number of undergraduate and master degrees offered in the university.
2. Price per ECTS credit (PREC): quantitative variable that reflects the average price per credit for college tuition first (in euros) for Bachelor and Master. We measure here the cost of what is offered;
3. Rate of foreign population (POB): quantitative variable that reflects the percentage of foreign population in the region where the university is located. Try to collect the potential networks for mobile students in another country.
4. Prestige (PRESTG): qualitative variable that will be used as an indicator of prestige of a university. It takes the value 1 if a university is in at least one of the three international rankings of quality of universities (and therefore will be considered more prestigious), and 0 when it is not.

We proposed 6 models using the same explanatory variables to facilitate comparison. All variables have ordinate at the origin and it is checked no problem to perform linear regression, meeting the assumptions of the classical model regarding linearity, constant variance and uncorrelated (Greene, 2012), not presenting problems of heteroskedasticity and autocorrelation.

3 Results and Discussion

Below are 6 estimated models with significant variables:

Model 1: total master students.

$$\hat{ETM} = -216,88 + 4,4TITUL + 0,68P REC + 9,95POB + 184,7P RESTG;$$

Model 2: master students from Latin America.

$$\hat{ELM} = -60,43 + 1,4TITUL + 4,06POB + 153,5P RESTG;$$

Model 3: master students from the rest of Europe.

$$\hat{EEM} = -56,88 + 1,1TITUL + 0,33P REC + 62,2P RESTG;$$

Model 4: total students of grade/bachelor.

$$\hat{ETG} = -936,2 + 18,8TITUL + 47,8POB + 332,3P RESTG;$$

Model 5: bachelor students from Latin America.

$$\hat{ELM} = -297,66 + 6,3TITUL + 13,3POB + 120,27P RESTG;$$

Model 6: bachelor students from the rest of Europe

$$\hat{EEG} = -504,38 + 9,5TITUL + 28,93POB$$

In order to facilitate their comparison, results were displayed in the following tables, showing, for each models considered, the coefficients of determination (R-squared) and the variables that have been significant sorted in descending order of their standardized coefficients that indicate the relative importance of that variable in the model (the higher ratio, the greater relative importance within the model).

Table 1 Comparison of the models. Number of mobile bachelor students (total regions and by main source)

Bachelor model. Total (R-squared =0.57)	Bachelor model. Latin America (R-squared =0.6)	Bachelor model. Rest of Europe R-squared =0.45)
Academic offer	Academic offer	Academic offer
Rate of foreign population	Rate of foreign population	Rate of foreign population
Prestige	Prestige	-

Source: own elaboration

Table 2 Comparison of the models. Number of mobile master students (total regions and by main source)

Master model. Total (R-squared =0.72)	Master model. Latin America (R-squared =0.63)	Master model. Rest of Europe R-squared =0.61)
Academic offer	Prestige	Price
Price	Academic offer	Academic offer
Prestige	Rate of foreign population	Prestige
Rate of foreign population	-	-

Source: own elaboration

The results showed that all models were significant (p-value = 0.000) and taking into account the values of the coefficient of determination R-squared (whose values are between 0 and 1) in general the models were very good. It explains variations of the variable number of students between 45% and 72%, depending on model. The best adjustment was obtained for master than for bachelor, and it was a little better for students of Latin America.

In addition all coefficients of the variables were positive, which means that there is a direct relationship between the predictors and the dependent variable, indicating that changes in the variables are in the same way. For the continuous variables any increase (or decrease) in these variables (keeping constant the rest) causes an increase (or decrease) in the number of mobile students which is given by the coefficient.

For the prestige variable, the coefficient is interpreted as greater number of students (in this case because its coefficient is positive) that is in the most prestigious universities, compared to those that are not in international rankings.

All results obtained showed that the two models for master and bachelor were different, i.e. variables that influence the number of students are different in these cases and, moreover, these differences are exacerbated when we consider the origin of students.

Academic offer is the most important variable to explain the number of undergraduates (whatever the source). It happened the same for the master level, except for Latin American students that emphasize the prestige above the academic offer.

The academic offer and the number of mobile students enrolled in Spain increased in the last years, especially after the application of Bologna plan since 2006. Thus, the number of bachelor, master degrees and universities grew in the last years. This growth was always higher in the case of master degrees (Ministry of Education of Spain, 2015).

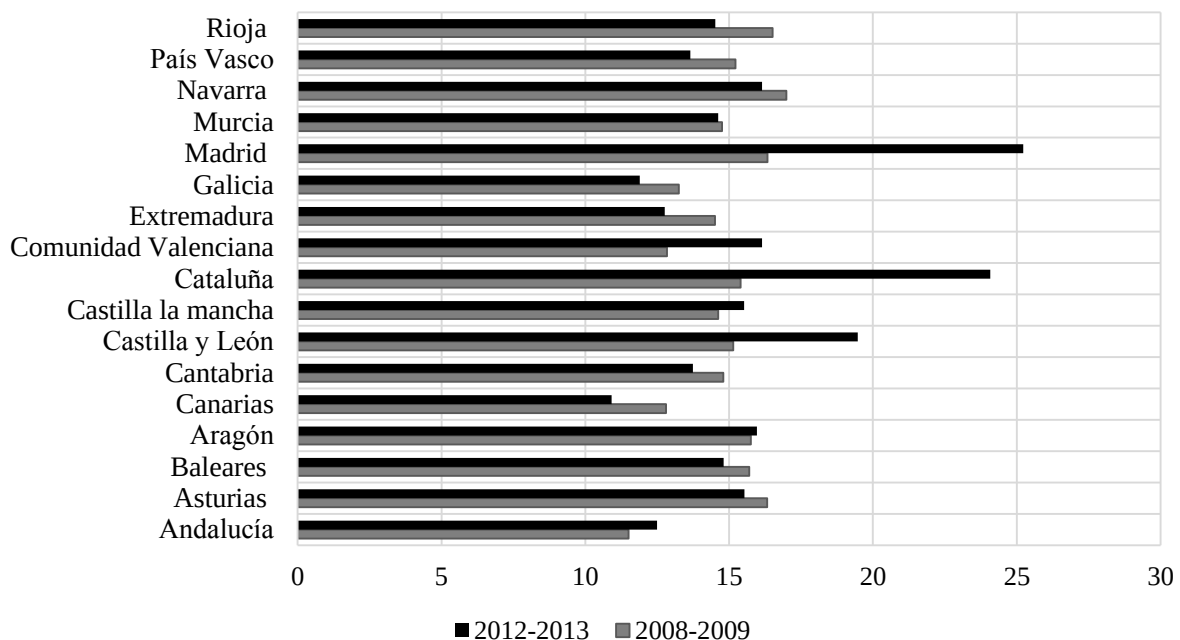
The variable price is relevant when studying a master but not to study a bachelor (p -value = 0.217). Thus, it was not significant for bachelor students from the rest of Europe (EEG). Moreover, differentiating by region, price was not significant (p -value = 0.141) for students from Latin America (neither master nor bachelor), however it was the most significant to explain master' students coming from the rest of Europe (with a standardized higher coefficient).

Mobile and domestics students have the same tuition fees in Spain, like in the most of the European countries (OECD, 2014). It is around 20% of total cost, except for those who are covered by scholarships.

In the case of Spain from the last crisis the education budget were harshly reduced and tuition fees were increased at the discretion of each region. Therefore it caused a growing dispersion in these tuition fees, especially in the case of master degrees, which are more expensive (Graph 3 and 4). Plus, mobile students are an important source of incomes that could partially compensate budget cuts.

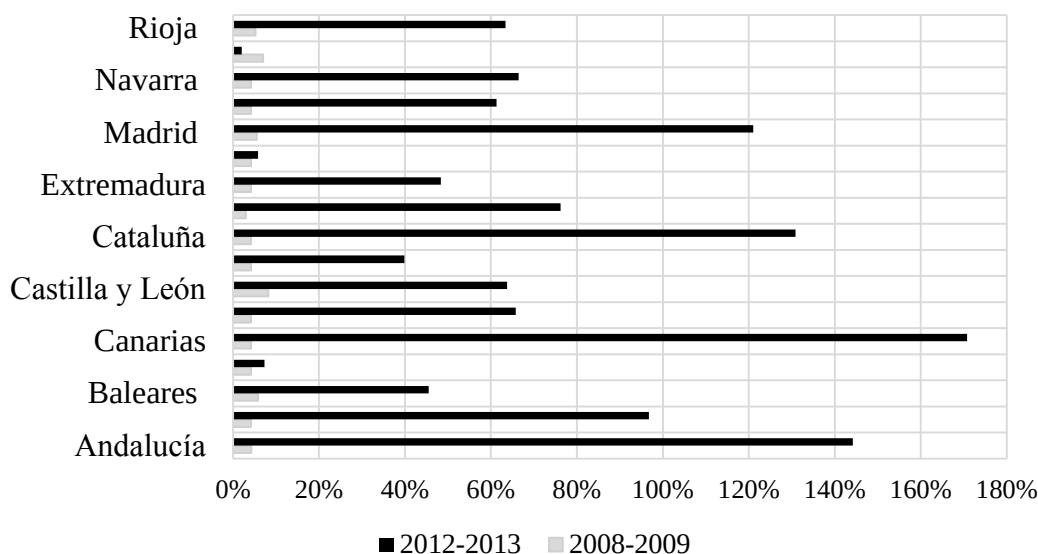
At the same time the scholarship requirements became higher and the total amount received decreased. Such resources would be very important to attract mobile students, especially European students.

Therefore it would be difficult but necessary to get a leverage between the education budget and tuition fees in a context of growing and competitive education destinations.



Source: Ministry of Education of Spain, 2015

Graph 3 Changes in the tuition fees in Spain in Bachelor by region. 2008 vs 2013



Source: Ministry of Education of Spain, 2015

Graph 4 Changes in the tuition fees in Master in Spain by region. 2008 vs 2013

The rate of foreign population in the region is more important in bachelor (occupying the second position behind academic offer) than master, where falls to the last position or, in the case of students from Europe, it was not significant (p-value = 0.205).

Previous networks facility adaption to the receiving country and it constitutes an excellent promotion way.

Prestige of the university is more relevant for master than bachelor (where it was the last position). In this last model, for bachelor students from the rest of Europe the prestige was significant (p-value = 0.229). However, for master students, it was important for both sources, Europe and Latin America, but in this last case, master students from Latin America gave more importance to prestige (being the most relevant variable).

Spain has in 2015 near 23 universities in international academics rankings. Developing specific strategic to maintain and increase this number is usual between international universities, especially in countries such as the USA and United Kingdom. However other countries also use successful marketing campaigns as universities in Asia.

In any case here is very important the role of teachers in order to improve the quality of the Education system especially in a context of costs reduction. Moreover, training to improve teachers' skills and recruitment would be a great way to improve the quality of education system, particularly of recruitment of highly skilled mobile students.

Conclusions

This paper addressed new and specific pull factors of international mobility that is crucial to improve skills in order the attractiveness of any academic destination.

Reasons of to choose a destination are different according to the level of studies. Thus at bachelor level the main reason is the number of academic degrees in the destination, and also the existence of migrant network in the destination.

The necessity of new revenues encouraged the universities to increase the number of degrees together the adaption to Bologna plan and also the creation of new private universities. It have made more attractive the destination of Spain

At master level these reasons change according to the origin. Thus from students of Latin America the most important was the prestige of institutions measured by the international academic rankings, but also the academic offer and the migration networks. An in the case of students from Europe the most important was the tuition fees, the number of degrees and the prestige.

In the case of European students and prices, changes in the last years will affect the number of mobile students in different regions since there is a higher dispersion of tuition fees.

In addition, universities are taking in account the international rankings that it is very important for mobile students such as the case of Latin Americans Students.

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Competitiveness of a country and some peculiarities of improving it on the example of a small open economy

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Abstract

Purpose of the article The economic development of a country reveals the necessity for improving the competitiveness of the country, as it creates the developmental prospects. Increasing competitiveness is the basis for realizing the country's national interests and as a result, for the countries with small open economies, the introduction of the relevant standards corresponding to modern challenges at every level of economic relationship is particularly important. The purpose of the work is to identify the peculiarities of improving the competitiveness of the country with small open economies (on the example of Georgian economy).

Methodology/methods The work uses the methods of analysis, synthesis and comparison; however, factor analysis and methodological approaches proposed by the International Institutes. The study is based on public statistical data, reports, scientific articles, etc.

Scientific aim Based on the trends of the last decades, the dynamics of the comparative advantage and non-beneficial conditions is analyzed. Attention is paid to the negative factors, which turned out hard to overcome.

Findings At the concrete stage of development, the competitiveness of the country is improved by appealing to various factors. The analysis of the principal factors was used to identify the further perspectives for progress, which are mainly associated with the macroeconomic environment, export, import, exchange rate and innovations. As for the identified negative factors, the work tries to give the ways to mitigate their impacts.

Conclusions In order to improve competitiveness, a complex of economic reforms must be developed stimulating and creating the preconditions for attracting long-term investments. In this respect, the critical analysis of the opportunities to use the mechanisms approved in the developed economies must be a priority. Government macroeconomic policy can influence the use of the economic potential of the country and improvement of its competitiveness on the world arena.

Keywords: Competitiveness, Econometrics, Trade, Foreign Exchange, Environmental Accounts

JEL Classification: C01, F1, F31, E01

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Introduction

The competitiveness of a country determines a range of issues of a vital importance, which concern even the economic or national security of the country. Consequently, every government must try to maintain the existing degree of competitiveness and activate the reserves, which will help improve the said level. The national interest in the consolidation of the statehood and promotion of the development relevant to the modern trends needs permanent care.

Establishing, maintaining and expanding competitive production is very important for a country. This question is particularly severe for small open economies. The severity is even greater if a country is a post-Soviet one. In such a case, a chain of problems occurs, with the reliability and completeness of the statistical data as one of them.

The fully operational National Statistics Office, collection of information, primary treatment, reprocessing, etc. are an important state affair and can be considered even as an attribute of independence and safety of the country.

Modern trends of global development clearly evidence that the sustainable and progressive development of a country is possible only through the expedient and effective measures. A similar model of development is particularly urgent for small countries, which aim at finding their own niche and establishing themselves further at the regional and world scales, or at best, consolidating and improving one's own positions.

The process of globalization offers better starting positions to bigger countries. Certain advantages (size of their resources and market, permanent membership of different international organizations, political and military influence and the similar) make them key "players" on the international arena, while other countries are forced to obey to their "rules". This is why smaller countries have to make more efforts to force others to consider their interests regionally or internationally.

The present study is the attempt to study the issues of maintaining and improving a country's competitiveness on the example of Georgia and identify a number of peculiarities, which help perfect the mechanism to improve the competitiveness of small countries.

Economic competitiveness

As the economic integration gets more active at the world and regional levels, the interest in studying the competitiveness is keener. The results of various studies underline such urgent issues of competitiveness, as national ideology, use of quantitative methods to study competitiveness, attractiveness of investments, etc. „Ideology is thus a dynamic structure, a bridge by which timeless values are connected to the surrounding reality in various cultures at different points in space and time“ (Lodge, et al, 1987). It is such an approach allowing maintaining and developing the variability of the modern world. Small countries can play a particular role in this direction. If they are able to reach an organic unity of the traditional and modern activities (views), their national interest will be shared more peacefully.

The Global Competitiveness Report of the World Economic Forum defines competitiveness as "the set of institutions, policies, and factors that determine the level of productivity of a country" (World Economic Forum, The Global Competitiveness Report 2009–2010). Notwithstanding the level of the economic development, the economic links between the countries gradually become stronger and more extensive. "the nature of the relationship between advanced economies and emerging ones has evolved, and emerging and developing countries have created stronger ties among themselves (World Economic Forum, The Global Competitiveness Report 2013–2014).

Economic competitiveness is directly associated with the production process. Production is formed under the influence of export and import volumes. Export and import control has always been an urgent issue even for such a country, as the USA is (Balancing the National Interest: U.S. National Security Export Controls and Global Economic Competition (1987). Surely, with a different context, but the study of the importance of export and import is doubtless even for small countries.

A scientific view among other things, was developed about the competition and competitiveness and one of the evidences is the urgency of the development of innovative economics in the developed economies (New York's Nanotechnology Model, 2013). Consequently, unless the prospects for development of innovative economics in small countries are identified, a number of difficulties are anticipated in the future. Growth of GDP is one of the strong urges for such changes. This is why it is considered a resulting indicator in the study.

The economic-mathematical apparatus is used increasingly widely to study competitiveness. „The mathematical sciences are vital to economic competitiveness. They are a critical, generic, enabling technology“. (Mathematical Sciences, Technology, and Economic Competitiveness (1991), National Academy Press, Washington, D.C. p.101); in the given case, a regression analysis was selected as a study method and the association between the exogenous and endogenous factors was described by plotting an econometric model.

The major factors in the study of competitiveness of a country in addition to the quantitative factors, may be qualitative, non-material factors, in particular, social factors, including level of corruption, etc. (Csath, 2007); however, in our case, no such factors are included in the regressive model.

Table 1 Global Competitiveness Index GCI 2014–2015 (Georgia)

	Rank (out of 144)	Score (1-7)
GCI 2014-2015	69	4.2
GCI 2013-2014 (out of 148)	72	4.2
GCI 2012-2013 (out of 144)	77	4.1
GCI 2011-2012 (out of 142)	8	4.0
Basic requirement (40.0%)	48	4.9
Institutions	48	4.2
Infrastructure	59	4.3
Macroeconomic environment	48	5.1
Health and primary education	63	5.8
Efficiency enhancers (50.0%)	79	3.9
Higher education and training	92	3.9
Goods market efficiency	60	4.4
Labor market efficiency	41	4.5
Financial market development	76	3.9
Technological readiness	67	3.8
Market size	103	3.0
Innovation and sophistication factors (10.0%)	118	3.1
Business sophistication	113	3.5
Innovation	121	2.7

Source: World Economic Forum, The Global Competitiveness Report 2014–2015

In order to fix the degree of competitiveness of a country, the competitiveness index is calculated by various international organizations. The most important and thorough of them are the reports of the World Economic Forum publishing the values of the global competitiveness index (GCI) annually by considering 12 factors (institutions, both private and public; infrastructure, macroeconomic environment; health and elementary education; higher education and vocational training; efficiency of the commodity and service market; labor market efficiency; level of the financial market development; technological readiness; size of the market; level of business development; innovations).

In studying the macroeconomic environment, the global competitiveness index envisages such indexes, as state budgetary balance, gross national savings, inflation, state debt and credit rating of the country.

Georgia is a small open economy with scarce domestic finances to develop its economy. For attracting foreign investments, the similar ratings are very important for the country. In the most recent report of the World Economic Forum Georgia ranked the 69th among 144 countries with 4,2 points (out of maximum 7 points).

Georgia first appeared in the reports of the Forum in 2004, and the progress for the last 11 years is evident: 2004/2005 – 94 (3.14), 2005/2006 – 86 (3.25), 2006/2007 – 85 (3.73), 2007/2008 – 90 (3.83), 2008/2009 – 90 (3.89), 2009/2010 – 90 (3.81), 2010/2011 – 93 (3.86) 2011/2012 – 88 (3.95), 2012/2013 – 77 (4.07), 2013/2014 – 72 (4.15). At this point, it should also be noted that the principal means for Georgia to compete with others is its cheap labor force and natural resources (Samadashvili, 2010).

As per the evaluation of the World Economic Forum, Georgia is at the stage of development where the economic growth depends on the natural factors and foreign financial resources.

Macroeconomic Data review

Efficient operation of the National Statistics Office of Georgia depends on a well-organized and well-administered performance, particularly during the general censuses. For Georgia, with its population forced to leave the country (sometimes even for decades) due to the grave economic situation, identification of a number of macroeconomic indicators is quite urgent with their absolute and relative values allowing important interpretations.

The study used the annual indicators of 2003-2014. The quarterly values were rejected as most of exogenous variables were calculated with annual intervals. With the macroeconomic variables, there is always a problem of incomplete time series. This question is particularly urgent in the post-Communist economies, which lack important or reliable statistical data of long-term periods.

The period was chosen based on the following factors: since 2003, Georgia has seen important economic reforms oriented on both, short- and long-term outcomes; besides, by that time, Georgia had overcome the depressive period of the Civil War and post-war instability. The Russian-Georgian conflict of August of 2008, world financial crisis, democratic change of the government and various shocks, all occurred in the same period. These events together and individually were quite difficult to overcome for a country at the stage of transformation.

As a result, the analysis of this period is interesting in many ways; however, this time, we will concentrate on the economic aspects only.

Table 2 The Macroeconomic Data (2003-2013 years)

Year	GDP (mil. Dollars)	Export (mil. Dollars)	Import (mil. Dollars)	Exchange rate (Lari/USA Dollar)	monetary and non- monetary incomes per capita
2003	3,990.80	461.3	1,139.00	2.1459	80.4
2004	5,124.70	646.9	1,844.30	1.917	84.7
2005	6,411.00	865.5	2,487.50	1.8127	92.3
2006	7,761.70	936.4	3,674.80	1.7767	102.6
2007	10,171.90	1,232.10	5,212.20	1.6707	115.2
2008	12,800.50	1,495.30	6,301.50	1.4902	147.2
2009	10,767.10	1,133.60	4,500.20	1.6705	154.5
2010	11,636.50	1,677.50	5,257.10	1.7826	178.6
2011	14,438.50	2,189.10	7,057.80	1.686	195.2
2012	15,846.80	2,375.40	7,901.60	1.6513	218.4
2013	16,139.90	2,908.50	7,885.20	1.6634	246.6

Source: National Statistic Office of Georgia

The following time series were used to analyze the competitiveness on the example of Georgia, which are included in the econometric model without excluding seasonality, in particular, gross domestic product at stable prices of 2003 (in mil. Dollars), export size and import size (both in mil. Dollars), exchange rate (Georgian Lari to USD), monetary and non-monetary incomes per capita.

The issue of fixing the accurate number of the population of Georgia has always been urgent in recent years, particularly in the pre-election periods. The preliminary data of the most recent general census (held in November of 2014) demonstrated a 600000 reduction in the number of the Georgian population what will necessitate the major corrections to the system of relative values. It is for this reason, the absolute data are more purposeful to use for the macroeconomic analysis.

The indicators were compared in time mostly by using stable prices. When analyzing the price changes, the fact of Georgia much depending on the imported goods and transfer and factorial incomes from abroad is to be taken into account. This is why, the model, in addition to the varying exogenous import size, includes monetary and non-monetary incomes, which are partly financed by foreign transfers.

The data were taken from the official web-sites of the National Statistics Office of Georgia, National Bank of Georgia and the Ministry of Finances of Georgia. The sources of the export and import data are: Revenue Service of the Ministry of Finances of Georgia, Service Agency of the Ministry of Internal Affairs of Georgia, Georgian State Electrosystem Ltd., Georgian Gas Transportation Company Ltd. At this point, it should be noted that the exact data will be published on November 16, 2015, and it will be possible to correct the gained results, and no US Dollar inflation in envisaged in the calculations.

Statistical analysis of the macroeconomic data

We associated the competitiveness with gross domestic product, because at least its quantitative growth (without considering qualitative factors) improves the prospects for the country's development. We considered export, import, exchange rate, monetary and non-monetary incomes as exogenous variables.

The impact of several independent variables ($X_1, X_2, \dots, X_n$) on resulting variable (Y) was studied by multiple regression linear model (Greene, 2012; Wooldridge, 2013). The following association must be outlined between them:

$$Y = \text{constant} + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 \quad (1)$$

Where Y is the Gross Domestic Product at stable prices of 2003, X_1 is the export size, X_2 is the import size, X_3 is the exchange rate (between Georgian Lari and USA Dollar, as all other indicators are calculated in foreign currency), X_4 is the monetary and non-monetary incomes per capita, b_1, b_2, b_3, b_4 are the coefficients showing the impact of the unit change of the relevant variable on the resulting variable when other factors do not change.

As a result of the data analysis, the regression equation was drafted as follows:

$$Y = 4611.161 - 0.89944X_1 + 1.21484X_2 - 1992.92X_3 + 32.41988X_4 \quad (2)$$

i.e. an equation was gained, and it is necessary to identify the independent variable(s) to use to assess the resulting variable or for prediction purposes. The indicators of regression equation are high: Multiple $R=0.999422$, R Square $=0.998844$, Adjusted R Square $=0.998073$, Standard Error $=185.2976$, as well as F-statistics (1295.54956). The principal equation of disperse analysis is as follows: $178137865.1 = 177931853.8 + 206011.2466$ (Total = Regression + Residual).

As it is known, in case of a regressive model, the probability of arriving at the value of each independent variable varies from 0 to 1. Consequently, all independent variables with their probability not less than 0.15, were considered reliable for the purposes of analysis and prediction. The less the probability is, the more the value of an independent variable is. Only one of the four independent variables, X_1 has P-value of 0.15 (thus, the probabilities were distributed as follows: Intercept - 0.030840807, X Variable 1 - 0.07494885, X Variable 2 - 0.000116819, X Variable 3 - 0.049166281, X Variable 4 - 0.0003593).

Consequently, the impact of export size, import size, exchange rate and monetary and non-monetary incomes on the economic development of the country (Georgia) is obvious.

Findings

High determination coefficients of the regression model and F-statistics prove the value of the equation. In addition, t-statistics show that the parameters of the model are statistically significant. The analysis of different data shows that the gained evaluations are stable values. Therefore, we can use the results of the model to evaluate, analyze and predict the economic system of the country.

Foreign shocks influence any country, but their impact may be particularly painful for small countries (Kakulia, 2008). The opinion of the small economic systems being more flexible and apt to changes, is not always true. For Georgia, the variations of the foreign exchange rate, particularly with US Dollar, were particularly painful because the rate of dollarization in the country is quite high. This is evidenced by the value of b_3 of 3629.404884.

As per experts' opinion, 60% of the population of the country has loans of commercial banks or non-banking financial institutions. In addition, most of their loans are in US Dollars. The exchange rate from the average 1:1,7301 in August of 2014 skipped to 1:2,2611 in April of 2015, and the gap increased as well. If the gap in August of 2014 was from 1:1,7214 to 1:1,7136, in April of 2015 it varied within the limits of 1:2,2432 and 1:2,3327. This is why the exchange rate has high coefficient in model (2) evidencing the importance of the variation of the exchange rate for the economic system of the country. Both, companies and customers gained negative results from these variations. Reduced purchasing ability of customers and increased prices of foreign goods put the companies to hardship. The sales volumes decreased and investing became less attractive.

For any country, the source of foreign currency flow is the international trade with goods and services, money transfers, factorial incomes and investment and credit capital flow. The empirical analysis of the indicators of the commodity trade evidences that at present, the outflow of US Dollars from Georgia exceeds inflow by several milliards (Papava, 2015). This process coincides with the onset of the depreciation of the national currency. In particular, the export of goods from August through October of 2014 decreased by 69 mil. US Dollars (8.4%) as compared to the same period of the previous year. Georgian export has not seen such a fall since the economic crisis in 2009.

The US Dollar outflow as a result of the commodity trade was to be balanced by other sources of the US Dollar inflow. The service trade balance of Georgia was always positive in recent years, with a certain fall as compared to the previous years, basically resulting from the reduced international transportation operations.

The monetary transfers are the amount the Georgians employed in foreign countries send to Georgia. The money transfers are an important source of foreign currency for Georgia and they make annual 1.2-1.4 milliard USD in recent years. However, in July of 2014, the flow decreased. The said trend is considered in the coefficient of the last component of the regression model.

The factorial income is basically made up of the incomes gained from the investments (profit, dividends). As there are more foreign businesses in Georgia than Georgian ones abroad, the outflow exceeds the inflow.

The US Dollar deficit (750 millions) was to be balanced by the inflow of foreign investment and credit capital. Finally, the deficit of 317 million USD was financed with only 420 mil. investments and credits. The difference of (330 millions) is the size of USD, by which the amount of USD decreased in Georgia.

The third quarter in Georgia was marked by a touristic peak. This had and presumably, will have its impact on the exchange rate.

Accent is made on such external factors supporting the competitiveness, as the Association Agreement with the EU and reduced oil price on the world market. However, the effect of the latter is not unilateral. Georgia is a transit country and 5% of oil transported across it retains to Georgia. Consequently, as the oil price decreases, the amount Georgia takes for the oil transit decreases, as well.

Conclusions

Calculating the macroeconomic indicators for small open economies is even a part of an economic safety. Particularly important is the calculation of such statistical data used to calculate the relative values. Evaluating the accuracy of the statistical calculations and supporting the introduction of the international standards is the precondition to improve the competitiveness of the country. This question may become even more urgent in the future for small countries.

Variable macroeconomic environment hampers the maintenance and improvement of competitiveness, as business is usually attracted by stable and predictable economics, without which foreign investments and their positive effects (new goods and market, job generation, advanced techniques and technology, new accounting standards, etc.) cannot be attained.

The positive effect of the depreciation of the exchange rate of Georgian Lari can be the cheaper export of Georgia, or vice versa, more expensive import in Georgia. However, in this case, the variation of not nominal, but real exchange rate matters. The latter, besides the currency value, shows the difference between the prices. It is clear that if the inflation rate is not high in the country, the trade advantage gained at the expense of the exchange rate depreciation will be maintained.

Georgia will need more investments in the following years to reach high economic growth, and reforms to improve the business environment must continue for this purpose, private savings and local investments must be stimulated and efficient legal base must be established offering the local and foreign investors sound competition.

In order to improve competitiveness, a complex of economic reforms must be developed stimulating and creating the preconditions for attracting long-term investments. In this respect, the critical analysis of the opportunities to use the mechanisms approved in the developed economies must be a priority.

The infrastructure must be developed what is permanently done by the state; however, a higher rate of development would be much more beneficial for the country. Investing in education and permanent staff re-training is very important, as the qualified labor resource is the reliable guarantee to improve competitiveness.

Finally, we can conclude that the government and particularly, its macroeconomic policy can influence the use of the economic potential of the country and improvement of its competitiveness on the world arena.

The following studies must consider competitiveness by comparing the developed and developing economies and question as to what are the prospects for a developing economy at the beginning of the XXI century to become a developed economy in several decades, i.e. what are the chances for the processes similar to the economic outbreak of the East Asian countries to occur in the developing economies in the coming decades.

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The economical and political consequences of hosting worldwide events in developing countries

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Abstract

Purpose of the article The aim of this article is to point at the consequences of hosting worldwide events in developing countries with specific look at FIFA World Cup creating economical, social and political instability in Brazil.

Methodology/methods For this article, scholarly literature and different statistical and economical portals were used. In the practical part, logical methods as analysis, induction and deduction were used.

Scientific aim The theory of utilitarianism is analysed to the socio-economical situation in Brazil.

Findings The subject of the research is the Brazilian situation prior to the FIFA World Cup 2014 and the impact of the event on macro economical situation. When hosting global event, developing countries undermine transformations, which arises from their economical and political character. Rising expenditures throughout the whole process of hosting the global event involve job formation, infrastructure enhancements, and creating tourist attraction to the country. According to short-term perspective, the developing country draws attention and makes itself known, on the other hand, from long-term viewpoint, results into state encumbrance and eventual HDP instability. The costs to build up infrastructure are significantly higher to be invested into a developing country than a developed one. However, after a global event, there are some groups within the country that did not benefit from it. According to utilitarianism, it is not economically ethical to host such an event in a developing country.

Conclusions The cases from specific developing countries hosting global events have demonstrated that the long-term results are not economically beneficial. The most common critic against utilitarianistic approach is not taking into consideration whether the action is right or wrong. Nevertheless, utilitarianism considers everyone, therefore when analysing a situation, the general welfare and all stakeholders has to be taken into concern; this means that it often benefits the largest group.

Keywords: developing countries, globalization, economical development, FIFA World Cup, worldwide event

JEL Classification F63, O57, L83

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Introduction

As the global financial slowdown took place in 2008, many developing countries dependant on a trade boost from worldwide had to change the way their economy was structured. An idea of hosting a global event does not only change a country's infrastructure for a certain short period of time, it most certainly rebrands it and involves more financial investment in long term view in order to keep up with the foreign direct investment (FDI) need from abroad.

Worldwide events have always caused a lot of changes in countries, economically as well as politically. Developing countries often undermine a big transformation, which arises from the character of the country. These changes are mostly noticeable throughout economical and political landscape, but also through the terms of the society. The general idea behind a country hosting a global event is that it will be beneficial for the country and it will gain a lot of economic growth. However, there are more aspects to it. Hosting such an event involves a lot of different stakeholders. Some of them benefit from such event, as the organizers of the event, construction companies for new infrastructure and building or the government trying to draw more attention to their country for international alliances. Despite of advantages for stakeholders, the majority of the local businesses are deprived of fair development during a global event taking place in the area.

Developing countries increasingly demand to host international global events furthermore achieve the perceived economic accelerator of investments into their countries. The question remains, if this action justifies the long-term costs hidden with hosting such event.

1 The role of state when hosting a global event

The role of State within a country is to protect national needs and provide economical political, and social welfare. The government with its scope and regime guidance plays an inevitable part of country's identity as it shapes local and international relations. In order to boost the countries development, the government's goal is to provide a certain level of economical stability and balance the investments risks. Such type of an investment enrichment of a country is hosting a global event, which is used to accomplish goals of all participating stakeholders. In general, the objective of a government is to declare the public of crisis elimination and quality progress optimization, in order to spread the life standards within national and international country insight.

1.1. Classification of participating stakeholders

When hosting a global event in a country, the State plays a determining role of creating a proper infrastructure, which influences all participating stakeholders. As Aaltonen (2008) states, the project managers should rather reflect on the stakeholder's needs and requirements in order to succeed in any global project. Stakeholders may be classified according to their power, while, hosting a global event in a developing country (Mitchell et al, 1997). In more specific way (Turco, 2012), involved stakeholders can be identified to be international and local investors, organizers, spectators, governmental bodies, financial institutions, media, sponsors, and large public. Some of the groups are benefiting or, as well, suffering due to economical, political, and social costs differently and on a different time frame.

In terms of national prosperity, the role of state is to provide an economic equilibrium of stability and growth of countries welfare. By decreasing economical risks and controlling ongoing domestic, as well as international operations, the State is able to provide a long-term ongoing prosperity for all participating stakeholders. According to Turnovsky (1999), government can highly influence influencing variables, such as rate of local investment while enhancing an international one. Stiglitz (1993) describes governmental actions as regulators as of financial market institutions intervening directly in the capital market. In addition, in developing countries, consumer protection is supposedly given high priority providing protection by government by improving macroeconomic stability and optimizing future source allocation. This is the way, which enables to stimulate growth and advance competition.

1.2 Utilitarianistic governance approach

Utilitarianism is a method to measure whether an action is ethically responsible or not. It concentrates on acts that produce the greatest ratio of good to evil for everyone. Utilitarianism is inspired on hedonism from Epicurus, a Greek philosopher, but Jeremy Bentham is considered to the founder of the systematic expounder of utilitarianism. (Shaw, 1999). The core of utilitarianism is that something is ethically correct when the greatest proportion will be happy. Utilitarianism measures the ethical value of an action by looking at the effects. According to this current good or evil is an affair of measurement. Which deed will provide happiness to the most people? According to Shaw (1999) there are four points that are important in utilitarianism. First, the activity that is being examined can have good or bad outcomes. Second, people are affected in different ways. For example when someone can eat a whole cake and it makes one person really happy, it does not mean that the other one would be equally as happy having the possibility of eating a whole cake.

Therefore, utilitarianism does not measure the greatest number of people that will be happy, but the greatest number of happiness the actions brings. (Parekh, 1974) The third point is when measuring the results of an action, the result mean more than the effects it has after or during an action, they also look at the consequences beyond. Lastly the action that is measured can also affect the wellbeing of non-human animals (Shaw, 1999).

The utilitarianism concept can be applied in different contexts when a government has to make decisions regarding its nation. A decision made based on the utilitarianism theory considers the good of the majority, the greatest happiness, and the outcomes of the decision are analyzed. The State's duty is to provide the society with economic growth, more jobs, a good basic infrastructure, and based on the utilitarianism, the decisions should regard the consequences of these decisions for the social welfare. A developing country hosting a global event, such as Brazil with the 2014 FIFA World Cup, is supposed to consider all aspects, political, economical and social, before even bidding for it.

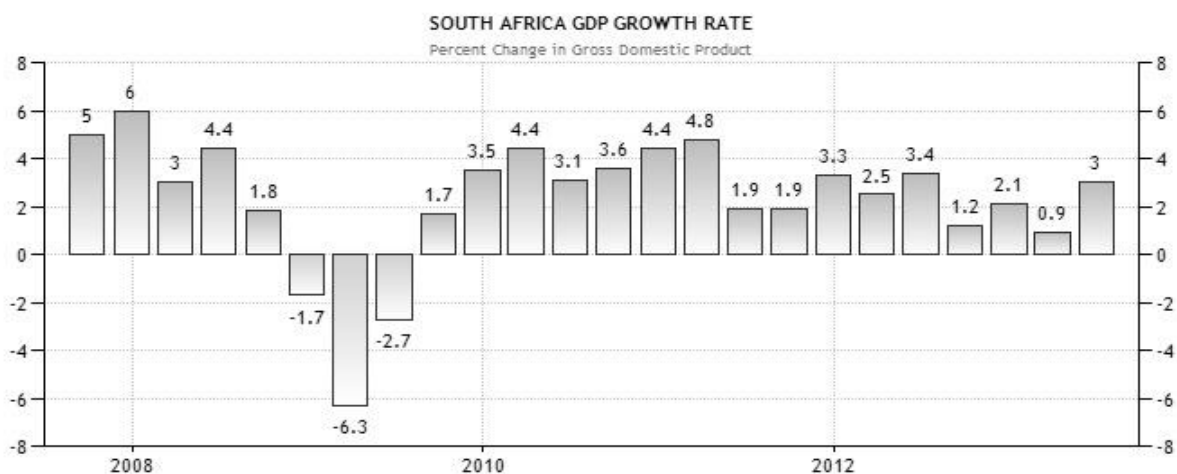
2 Impact of past global events in developing countries

To ensure the utmost potential benefits of hosting a global event, the state needs to consider the pre-event, and post-event economical, political, as well as social impact from a long-term from its country.

2.1 Economical impact

As the significance of hosting global events in countries over the past decades rises, the economic factor plays a major role in estimating the costs and beneficial results for stakeholders. For government, it is efficient to host a global event in short-term view due to the GDP immediate increase, unemployment rate decrease for a certain time. The advantages of decreasing unemployment locally and lower operating costs in developing countries are highly observable during the extent of an event and a short time period afterwards. In 2004 (Matheson and Baade, 2004), the operation costs of Greece Summer Olympics were \$1.71bil, while in 2000, four years earlier, the costs were to \$2.4bil in Sydney, as a developed country, where operation costs are higher.

However, from a long-term view, Turco (2012, p.58) describes the period after hosting an event as a 'circus leaving town', hosting a global event brings a lot of negatives in a longer time perspective. The evidence can be seen by simple economic analysis of GDP in South Africa from 2008 throughout 2012 (Figure 1). The strong forecast for a GDP within years 2013-2020 is conditioned by constant infrastructural investments, which were initiated by hosting FIFA World Cup 2010 (Euromonitor International, 2013).

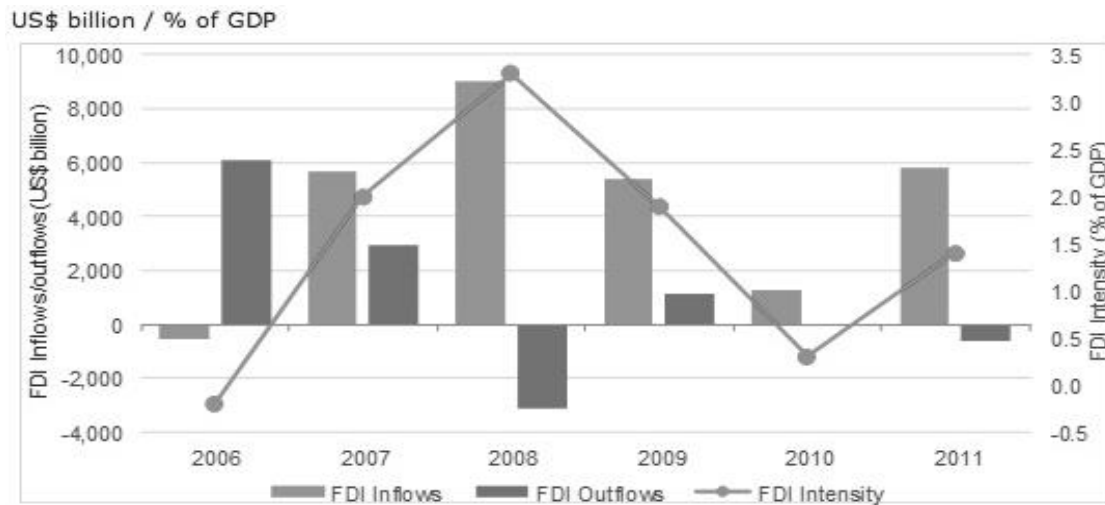


Source: Trading Economics, 2013

Figure 1 South Africa GDP Growth Rate

Globally, South Africa was ranked 39th in "Doing Business Report 2013" due to changes and financial injections coming from the prior years shaping the economy (Euromonitor International, 2013). However, the assumptions to continue the trends are based on the same financial boost and people's literacy, which is, sadly, not persistent to rise.

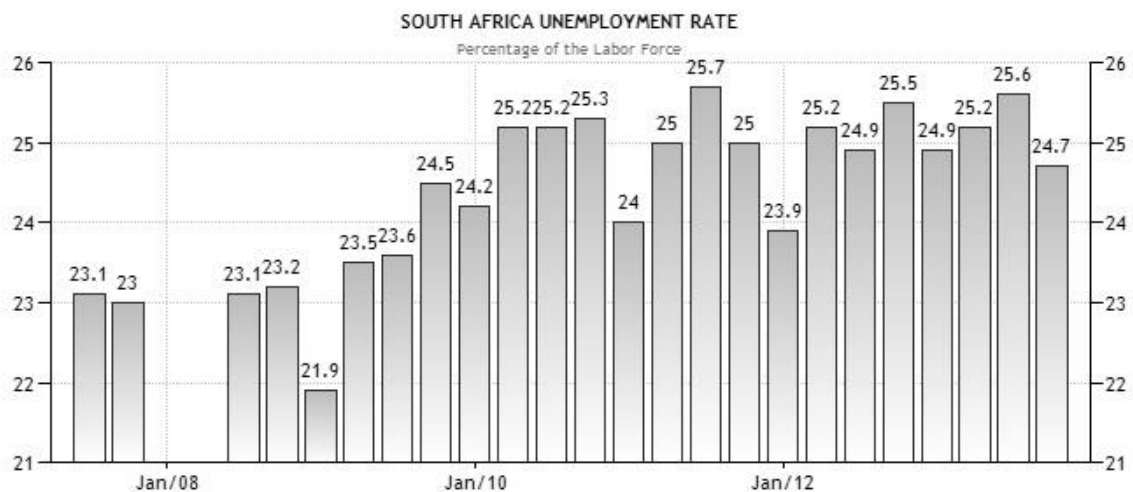
Another economical variable, which can be analysed in order to retrieve a picture of hosting a global event impact on a developing country from a long prospect, is to analyse the investment rate. The intensity of FDI flow in years 2006 – 2010 is shown at the following Figure 2. After World Cup 2010, South Africa experienced tripled FDI income, however, was not able to produce outflowing businesses.



Source: Trading Economics, 2013

Figure 2 The intensity of Foreign direct investment flow in South Africa

The level of country development determines the gained benefits for wider public and social welfare. There is a difference in a developed and developing country hosting a sporting event (Matheson and Baade, 2004). The costs to build up infrastructure are definitely higher to be invested into a developing country than a developed one. According to the authors, in South Korea, \$2bil was invested only into infrastructure prior to FDI investments. In India, such case lead state into debt, which afterwards caused taxation increase (Ugra, 2013). Local public suffers from regulations accompanying hosting global events. During World Cup 2010, local businessmen were restricted to sell their local food and were forced to move portable wagons or close up their businesses circa in 1.5km width, so that the visitors were buying the “commercial” beverages and concessions only.



Source: Trading Economics, 2013

Figure 3 South Africa Unemployment Rate

Every global event means formation of new job opportunities, which can decrease unemployment rates. The infrastructure in South Africa prior to the World Cup 2010 was being developed in the worst possible time from an economical perspective during the financial recession. The illiteracy of people as well as unemployment was decreased in short term view, however, there is still a massive shortage on educated people in engineering and technical skilled positions as the global events do not have a longer lasting effect on local education level nor does not decrease brain wash from a country. As seen in Figure 3, the employment was boosted very temporarily in 2010 and 2011 and has plateaued ever since.

1.2 Political impact

A global mega event is highly beneficial for the State of developing countries. Becoming internationally visible means to be more attractive on the international trade market. As Matheson and Baade (2004) state, these events 'put the country (or city) on map and provide significant international exposure to the host.' There is no doubt, that such actions influence trade and create new possible cooperation among different governments, consequently, creating strong political unions. As the authors later argue, international sporting events are considered to be a showcase of revealing economic, political, and cultural power of the country hosting such an event. However, one of the factors that favour hosting mega-events in developing nations from a political argument is, so called, "state rebranding." Clearly, such an example is 2010 World Cup held in South Africa, which, as Turco (2012), refers to as a unique opportunity of creating a new national image or brand. From the political perspective, benefits of portraying host country's image to the world exceed the negatives. Therefore, governments of developing countries bid more and more every year to become host countries of such events.

1.3 Social impact

Sport mega-events, i.e., Olympic Games, FIFA World Cup, UEFA EURO Cup, Commonwealth Games, as well as second-tier and relatively smaller events, can have significant social, as well as environmental impacts on host communities. Massive queues, intense traffic, and boosting aggression developing into riots among large public are the cause of deteriorating perception and state reputation. However, as Turco states (2012), even though people seem to visit industrialized nations more likely, visitors who didn't have strong insights about a developing hosting country will act as "brand advocates" for the destination. While socially, visitors gain positive experience, the locals have to adjust greatly to bear the pressure of a short-term change with long-term resulting effects.

2 The Brazilian World Cup 2014

The Brazilian protests prior to the World Cup in June 2013 and the proportion they gained were unexpected nationally and internationally, surprising everyone, from people to press and politicians.

3.1 Pre-event protests

The country have not had a social movement in more than twenty years and, with the growing economy and being the host of the global events FIFA World Cup in 2014 and Summer Olympics in 2016, the proportion of the populations' demonstrations of dissatisfaction were shocking (Saad-Filho, 2013). The movement was first initiated by an increase in the bus fare of R\$ 0,20 in the big capitals. A Non-Governmental Organization, called The Free Fare Movement (Movimento Passe Livre) started the riots against the increase of the bus fare, as they have been doing for eight years, every year the government increase the bus fare (Ribeiro, 2013). Despite it seemed as a usual demonstration, the government's decision to maintain silence about it, increased the number of people in the streets. As Ribeiro (2013) explains, even though many of these protesters were middle class who did not use the public transport, their dissatisfaction was bigger than this. They spend many hours in the traffic congestion and each year the number of cars in the main cities increase with the government policies of rising consumption. In addition, the expenditures with the FIFA World Cup and the Summer Olympics were another aim of the protesters, symbolizing this as everything the government has done wrong.

The Brazilian government's first failed attempt of containing the protest was to maintain silence and not respond to it. Furthermore, the media started to manipulate the riots' view, by picturing the manifesting people as hooligans and the police had the order of going violent with the protesters in an unsuccessful attempt of stopping the riots (Ribeiro, 2013, Saad-Filho, 2013). Consequently, the demonstrations started to grow with the indignation of people seeing the violence of what was happening in the streets. The following Figure 4 shows mapping of public involvement and the real time spreading societal participation by Hashtag Tool Analyzer (Nervo, 2013).



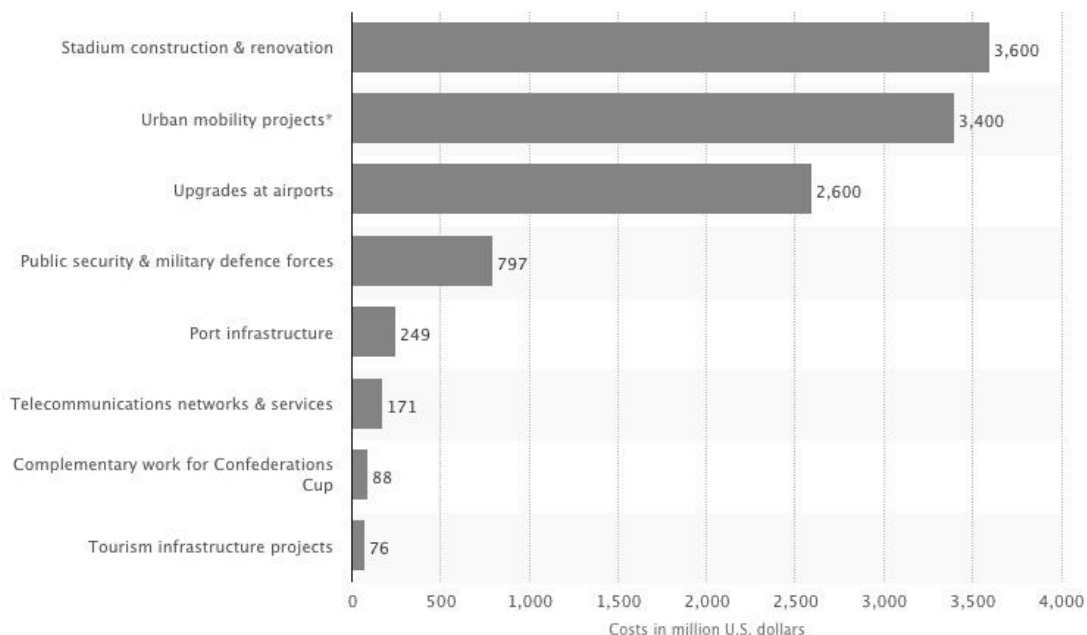
Source: Collaborative consumptions, 2013

Figure 3 Involvement of Brazilians in social networks mapped by Hashtag Analyzer

While the mass media had an important role in showing the population the events, the key player for organizing them was the social media. The internet power of easy connectivity and fast-spread information led the protest to a higher level, to a bigger and faster growth of the movement and turned the international press' attention to the country. In this moment, as stated by Saad-Filho (2013), the mass media changed their position and instead of criticizing, they start to support the riots, and manipulate the protesters. The manifest, firstly demanding the decrease of the bus fare, started to protest against a range of different things, such as the expenses involving hosting the global events, politicians, corruptions, demanding the improvement of basic social needs as better healthcare system, public transport, and safety. The future global sporting events which Brazil hosted were an important focus of the demonstrations, because of the manifestants' dissatisfaction with the news that the government will have to pay a part of the expenses with public money (Ugra, 2013).

3.2 Post-event situation

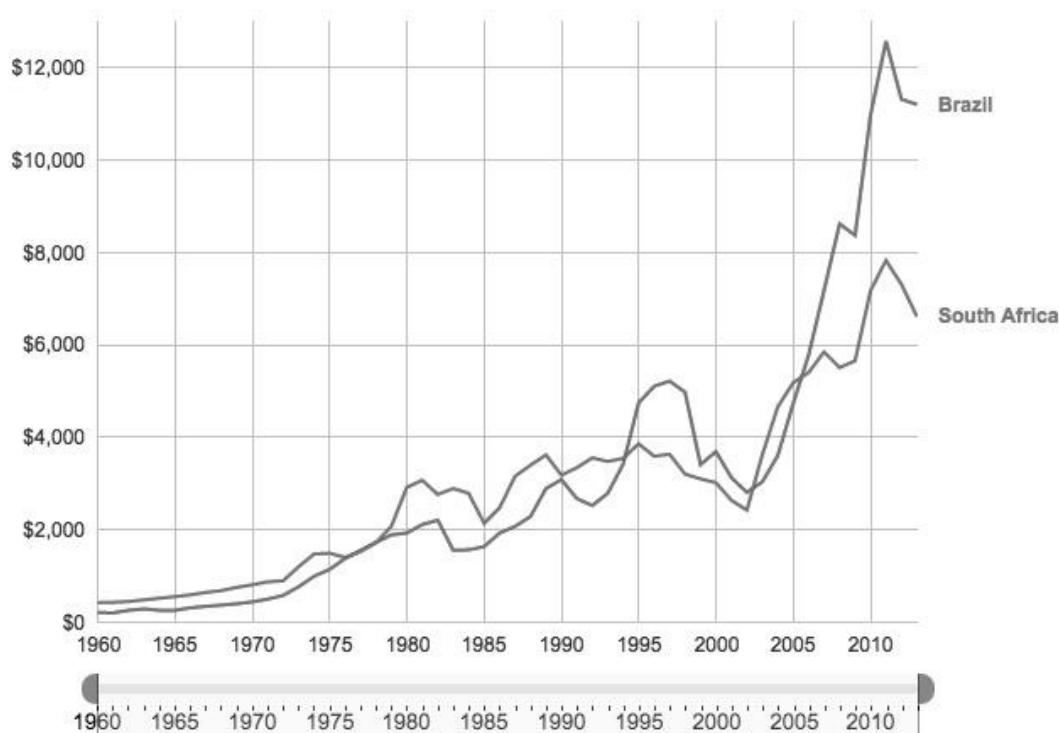
When analyzing through a utilitarian perspective, even though it is expected that the economy grew and the country gained world visibility, which has led to a momentary enhance in the tourism and commerce of the country, the outcomes are drastic in the long-term for the economy and society, as seen in the previous cases of developing countries, according to Turco (2012). The figure below reveals total expenditures to constructions, urban infrastructure, telecommunications and renovation in Brazil prior to year 2014 (Figure 4).



Source: Statista, 2014

Figure 4 Total costs of the FIFA World Cup 2014 in Brazil

Statista portal states, that despite the extensive publicity at the pre-event stage, with such high costs that had to be covered by the federal government, it is unsurprising that before that start of the World Cup event; almost 61% of Brazilian were thinking that the tournament would be a bad thing for a country.



Source: World Bank, 2015

Figure 5 GDP per Capita comparison, South Africa and Brazil

The values in figure 5 self-explanatory reveal a decrease in GDP growth, both in the question of South African post-world cup period, after 2011, and Brazilian situation, currently, after the World Cup 2014. At this point it is too early to analyse the overall economical impact of the sporting event held in 2014, due to incomplete Q1 2015 metrics, as well as the upcoming Summer Olympics, which will bring another economical and political shift within Brazil in approximately the next 2 years.

The point that has been clear from the beginning is that world cup countries keep spending more with each passing year of championship (Forbes, 2014). The article states that according to estimates published in the media, South Africa spent around \$4 billion on the last FIFA World Cup games in 2010. The total cost to put on the FIFA World Cup 2014 in Brazil is an estimated \$11.63 billion. As the statistics at Forbes article continue, \$11.63 billion can be compared to this year's education budget of \$24.2 billion.

Even though World Cup is highly costly to the state, it brought over \$336 mil to the tourist industry (Forbes, 2014) during Confederations Cup, as well as 804,000 people to attend the World Cup in 2014. The attendees may as well become ambassadors for the developing country to spread the updated and renewed vision. On the other hand, the part of the country and visual culture that tourists experience on such events do not usually correspond with the actual picture of most of the regions within the hosting country.

4 Discussion

In case of the Brazilian situation, the government is not being ethical, since it is not taking into consideration the consequences mega events from a long term view for. The government's main concern is being with the political aspects and the economy in short term, benefiting the stakeholders, however, not regarding the society in the long term, which is why it is not an ethical decision to host a global event in a developing country.

There are some critics against utilitarianism though. The most common critic against utilitarianism is that it does not take into consideration whether the action is right or wrong. So while the action might bring the most happiness it can be wrong to execute. Weaknesses in utilitarianism is that measuring the happiness is difficult, there is no standard for happiness, therefore it is difficult to decide how much happiness factors in the action that is examined brings.

Furthermore more the action might come into conflict with the idea of justice. Nevertheless utilitarianism considers everyone, therefore when analysing a situation the general welfare and all stakeholders has to be taken into concern, this means that it often benefits the largest group.

Conclusion

To sum up, it is clear, that a country's development depends mostly on the governmental decisions. The main role of the State is to make such decisions in an ethical and beneficial way, regarding all stakeholders involved so that it is possible for the majority to have advantage on these decisions. A global event is seen as an action to endorse economical, political and social growth. However, previous cases of developing countries hosting mega events have demonstrated that the long-term results are not entirely beneficial, such as the example of South Africa.

The government's responsibility is to concern about the prosperity of the country and its population, not entirely about political benefits that satisfy only a minor part of involved players. As it is difficult to satisfy all the stakeholders, the utilitarianism view says that one should concern with the outcomes of the decision, as to satisfy the majority. Since hosting a global event in a developing country is only advantageous in the short-term and mainly from the political perspective, the government that makes such a decision is not being ethical with its main role and the country's public society.

Even though global events are beneficial from the political angle, they are not necessarily economically or socially positive for the hosting countries in the long term, especially in developing countries, as mentioned. This paper argues that global events in developing countries are not ethical from a utilitarianism perspective unless there is a country's long-term sustainability and constant infrastructural growth guarantee.

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Approaches to strategy-driven sectoral competition analysis of business organizations

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Abstract

Purpose of the article The strategic diagnostics of competitive environment of a business organization play an important role in the process of formulating a business strategy, aimed at development of an undiversified (one-product) company. From analytical perspective, the competitive environment is usually distinguished and analysed at three levels – the industry, the strategic group and individual competitors. This paper focuses on the main analytical tools helping experts to analyse the overall strategic orientation of business organizations and on this basis to make assumptions on the belonging of these organizations to a particular strategic group.

Methodology/methods In the development and testing of the analytical model quantitative research methods are used. The required data has been collected through direct and indirect observations of specific business entities. The representative set will include companies from a particular sector of the Bulgarian economy, being mostly active on the market for a long time.

Scientific aim The economic theory envisages various tools for competitive analysis at the different levels, but because of objective reasons (costly data, reluctance of businesses to submit timely information, unsystematic data collection, etc.) some of them are difficult to implement, especially in transitional systems like the Bulgarian economy. Therefore, the purpose of this paper is to present an alternative and easy-to-use analytic approach, based on objective, publically available information. The goal is to enrich the strategic analytical instrumentarium through modification and adaptation of the existing views anticipating the constantly changing business conditions.

Findings The proposed tool has been methodologically backgrounded and empirically tested with data from the Bulgarian beer manufacturing sector. The results of the research show the consistency of the proposal made.

Conclusions The ideas developed in this paper will contribute to the endeavour of analysts to outline important trends concerning competitors' strategies, which in turn will improve the process of updating their own company's competitive strategy.

Keywords: strategic analysis, competitive environment, strategic analytical instrumentarium

JEL Classification: M15, M21

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Introduction

The economic theory envisages various tools for competitive analysis at the different levels, but because of objective reasons (costly data, reluctance of businesses to submit timely information, unsystematic data collection, etc.) some of them are difficult to implement, especially in transitional systems like the Bulgarian economy. Therefore, the objective of this paper is to present an easy-to-use analytic approach, based on objective, publically available information.

1 Existing strategy-driven approaches to sectoral competition analysis

According to the "father" of the contemporary strategic thinking (in the opinion of the influential magazine Economist from 18 July 2008), strategic business decisions are related primarily to the choice of field of activity and include the search for new directions in company's development. The final product of the strategist's work is the combination of new products, markets and production technologies developed by the company (Ansoff, 1999, pp. 29; 51). To the production technologies that are mentioned in this definition (according to an earlier expressed opinion of the same author), resources and their breakdown by products and markets could also be assigned (Ansoff, 1999, p.31). Also, the given definition should be understood in the way that at least one component of the strategic polygon must be new (Papazov, 2014).

Decisions relating to the creation of new products, acquiring new markets or the usage of new technologies and resources are among the most important elements of any strategy, as they are crucial for the competitive performance of the company. Following its strategy, each company tries first to position itself in the sector in which it operates, and then to defend its position in the long run. Because of their importance, the strategic decisions are taken as a rule by the entrepreneurs (owners), and in some cases – by senior managers of the business.

Of course, strategic decisions are not limited to the determination of aspects such as new products, markets, production technologies and resources. Within existing companies, the strategic search extends on clarifying the organizational structure and the key organizational processes, the choice of leadership style, and the identification of key controls. And if it comes to start-up businesses, entrepreneurs, besides everything else, are forced to deal with such important issues as determining the location of the company, choice of the legal form for realization of the entrepreneurial idea and the appointment of key management personnel. These strategic aspects of the management activity, however, will not be further discussed in this paper.

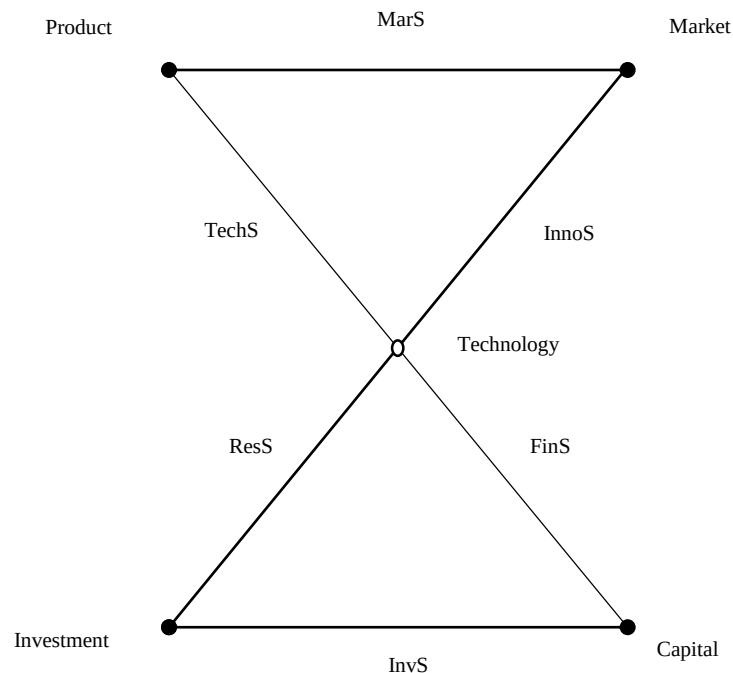
Along with clarification of the main elements of any strategy, it is important to shed light on the hierarchical and the connector links between them (Figure 1). The choice of a particular way of relating the strategic elements allows for the formulation of different approaches to elaboration of strategies – market-, product-, technological and resource-based views. The connector links, in turn, are a prerequisite for typologising of different strategies in functional (also called particular) areas like marketing, technology, innovation, financial, investment and resource strategies. In Figure 1 these strategies are designated respectively as MarS, TechS, InnoS, FinS, InvS and ResS.

Besides particular strategies, the management science discusses also overall or generic business strategies. In the context of what has been said, an overall business strategy comprises all of the above mentioned elements.

Which business strategies should be conceived as general and what is their content? On this subject, a number of prominent economists have already expressed views. Summarizing the research done by 29 teams of scientists over a period of over 30 years, Sumar et al. conclude that most of the expressed opinions tend, in one form or another, to the systematization proposed by M. Porter in the early 1980s (Sumer et al., 2012, p. 110).

M. Porter launches in the academic space two generic strategies – the cost leadership strategy (CLS) and the differentiation strategy (DS). [In fact, Porter proposes also a third type of strategy, the focus strategy, but it should be seen more as a special case of the first two, as it reflects their projections on a lower taxonomic unit – a segment or a niche. For more details see, Porter, 1980, p. 35)] The cost leadership strategy is based on the following logic: orientation to the general public → meeting the demand by offering a standard product → offering the product at low price → product manufacturing at low cost → use of cheaper resources in the manufacturing process. If the business needs an investment, the desired return on investment is typically achieved (due to projected lower profit margin in the price) at the expense of a higher assets turnover.

The logic of the differentiation strategy is different: orientation to a specialized market → meeting the demand by offering a tailor-made or customized product → offering the product at a relatively higher (premium) price → manufacturing of a high-valued product → usage of relatively higher quality (and therefore more expensive) resources. If the business requires investment, the desired return on investment is typically achieved (because of the normally lower assets turnover) at the expense of a higher profit margin included in the price.



Source: Own elaboration

Figure 1 Basic strategic elements and functional relations

Discussing the opportunities for implementing one of the two strategic alternatives (in the industry as a whole or in a separate segment), the corporate management should be aware that the mechanical orientation to one of two strategies is not recommended, as strategies differ in a number of characteristics such as necessary resources, skills, organizational prerequisites, way of control, motivational mechanisms and leadership style. For example, the cost leadership strategy relies heavily on large production volumes and economies of scale; avoidance of demanding customers; minimum expenses for research and development, after-sale service and advertising; strict administrative control. The differentiation strategy in turn emphasizes the creativity of the staff; best marketing skills of the sales team, the company's reputation, excellent design and engineering, after-sales service, powerful advertising and self-control.

According to Porter, a company will have an advantage over its rivals if it consistently adheres to one of two alternative strategies and manages to do their best to realize it. Compared with the leading company, the organizations without a clear strategic orientation will generally turn out to be with worse outcomes expressed by indicators such as return on investment (ROI), net income or free cash flow. In the words of Porter those companies remain “stuck in the middle”. Therefore, a prerequisite for a business success is the clear and possibly fastest orientation of the management to one of two strategic alternatives.

Porter's findings were confirmed by the studies of W. Hall in the early 1980s (Hall, 1980), among which stands out the analysis of the market position of seven US companies manufacturing trucks. [A concise presentation of W. Hall's investigation on the heavy trucks industry was also provided by F. Kotler in the earlier editions of his famous marketing management book (Kotler, 1991, p. 56)]. The results showed that the two companies following best one of the two alternative strategies, also achieve the highest score of ROI. For the rest five companies the options are to engage more strongly with one of the two alternative strategies, to move towards a narrower niche or exit the market. Observations of the subsequent steps undertaken in these companies confirm the assumptions made.

In the following decades, however, the development of many industries showed that the number of companies pursuing a mixed (also called integrated or hybrid) business strategy was increasing. Furthermore, some of these companies were among the most successful in the industry (White, 1986; Wright, et al., 1991; Miller and Dess, 1993; Parnell, 1997). This gave rise to some researchers to propose a modification of the initial model launched by M. Porter adding to it the hybrid strategy.

The reasons for the spread of mixed strategies are associated with processes and phenomena that have both technological and organizational nature. Among them the following could be mentioned: the use of flexible manufacturing systems (they allow for an easier expansion of a product line without higher technological costs); addressing new, currently uncontested market space (allowing for a company to offer new and of better quality products, cleared of unnecessary features and thus manufactured with the same or lower costs); the fight for every customer, leading to expansion of an existing product line (especially typical for SMEs operating on a market with a limited scale); the opportunities for more effective quality management. Among other things, many companies set themselves no longer the objective to be the best in the industry, but to remain (in line with the requirements of their shareholders) competitive and get sufficient profits.

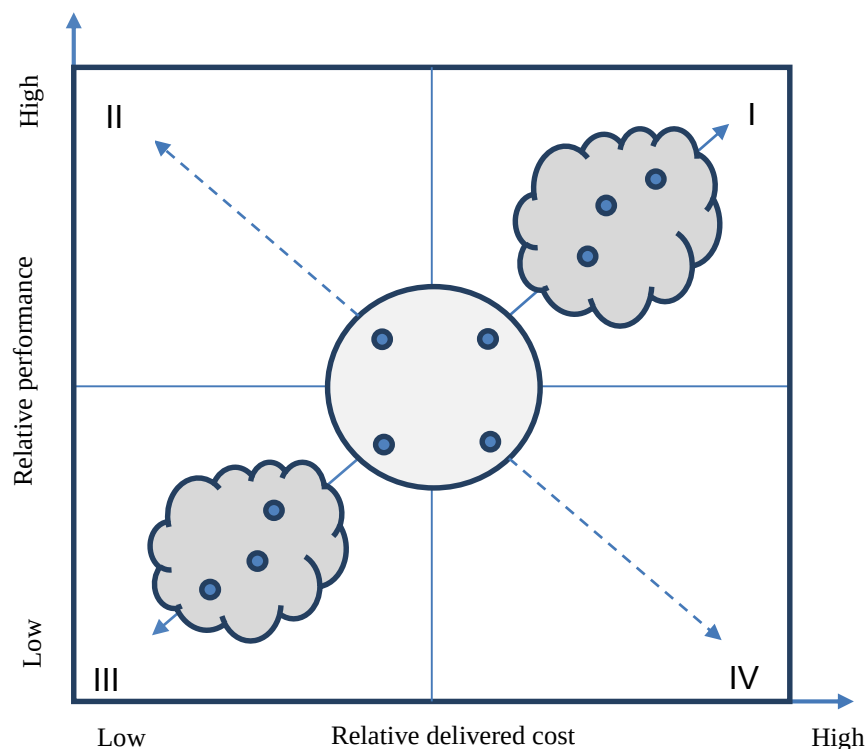
If there are indications that an economic entity is pursuing a mixed strategy, the question of its **preponderant** orientation to one of two common strategies arises. The answer to this question indicates affiliation of the company to a strategic group. As is known, the strategic group outlines the circle of immediate (and in many cases most important) competitors in the industry.

In search of an answer to this question, the economic literature offers two analytical tool. The one is the already mentioned competitive profile industry analysis, developed by W. Hall. The other is the so called strategic themes matrix proposed by D. Sexton (Sexton, 2009, pp. 21-22). Both instruments can be attributed to the popular grid models.

In the Hall's matrix the existing industrial businesses are plotted as points in the Cartesian coordinate system, where the x-axis contains the "relative delivered cost" (i. e. all costs involved in placing the product in the hands of a customer), while the y-axis reflects the "relative performance" of the offered product (i.e. shows its differentiation relative to competitors). Depending on the location of each company in the matrix, conclusions can be made about their affiliation to one or another strategic group. For example, companies falling in quadrant III probably belong to the group consistently pursuing a cost leadership strategy, while the companies from quadrant I orient themselves predominately to a differentiation strategy (Figure 2). If the abscissa and ordinate of a business intersect in the central circle, the company is pursuing most likely a mixed strategy. In this case, the reached magnitude of the chosen performance indicator (for example ROI) will show whether the company is "stucked in the middle" or perhaps tends to a case falling into the quadrants II and IV (the companies falling in quadrant II orient themselves towards perfection conditions, while companies from quadrant IV are heading to a catastrophe).

In the alternative strategic themes matrix, proposed by D. Sexton (Sexton, 2009, p. 22), slightly different indicators have been used to describe the horizontal, respectively the vertical axis – the "variable delivered cost per unit" (all incremental costs involved in bringing a unit of the product to the customer) and the "perceived value per unit" (the maximum that a customer is willing to pay for a unit of a product). As Sexton himself recognizes, the selected criteria are fairly close to that of W. Hall. Therefore, the conclusions that follow from the application of either instrument could be considered identical.

When applying the strategic profile matrix of W. Hall or the strategic themes matrix of D. Sexton, problems may arise related to the nature of necessary information or connected with difficulties concerning the provision of the required means. For example, two of the key indicators, the relative performance and the perceived value, are taken into consideration after averaging the subjective judgements of inquired or interviewed experts, including product designers, technologists, and marketers. If the analyst team has not addressed the right specialists, the information accumulated by help of questionnaires and interviews may prove inadequate. In addition, the use of techniques such as questionnaires and interviews require generally a large expenditure of time and money. The other couple of indicators, the relative delivered cost and the variable delivered cost per unit, are calculated on the basis of information found in non-public management and accounting sources to which the analysts have difficult access. The use of economic intelligence in this case is a possible, but also a costly decision.



Source: Adapted to Hall, W., 1980, p. 84.

Figure 2 Strategic profile of an industry

Thus, the competitive analysis done in this way turns out to become a useful occupation only for companies and research units with large budgets. However, such organizations would also experience difficulties if they have to organize the execution of such a research regularly in order to provide sufficient data for deriving trends in the structuring of strategic groups.

The need for tools that will be based on objective and easily accessible information is obvious. In the following expose, an attempt will be made to develop and justify such an instrument.

2 An alternative strategy-driven approach to sectoral competition analysis

Conclusions about the strategic orientation of a company can be drawn not only after analysing the main elements of any strategy – the nature of the markets the company serves, the specificity of the products it offers or the technology and the specific resources it uses for production. Implications about the strategic orientation of a company can be made on the basis of achieved financial results as an outcome of competitive struggle.

For Porter, the basic measure of company's success is the indicator "return on investment" or ROI (Magretta, 2012, p. 219). For this reason, the indicator will be used to demonstrate the idea about an alternative strategic tool for competitive analysis. The question is how, based on ROI, one can make conclusions about the followed business strategy, including companies that have chosen a mixed strategic form.

As is known, ROI expresses the ratio between the profit (in this case one of its forms, the operating profit or OP will be used), which a company generates as a result of its activities in a given period, and the resources invested in the company (typically used are final periodic values). Expressions of the latter are either total assets (TA) or total liabilities (capital) from the company's balance sheet. [In the first case, ROI is sometimes referred to as "return on assets" (ROA), and in the second – as "return on invested capital" (ROIC)]. In the following exposé, we will use the total assets (TA) as a measure of investment generated in the company, i. e. the ROI formula will be expressed as:

$$ROI = \frac{\text{Operating Profit}}{\text{Total Assets}} = \frac{OP}{TA} \quad (1)$$

Data on operating profits and total assets are taken from official financial reports of the companies, prepared at the end of a fiscal year. The information in them is usually public. For Bulgarian enterprises such information can be found in the Commercial Register of the country (www.brra.bg).

For analytical purposes, the ROI indicator can be decomposed into two indices: return on sales (r) and assets turnover (a). The indicator “return on sales” ($r = \frac{\text{Operating Profit}}{\text{Sales Revenues}} = \frac{OP}{SR}$), which is also called “profitability index”, or “margin”, reflects the surplus from revenues, available after covering the operating expenses, i. e. the company’s ability to yield profit. The “assets turnover” ($a = \frac{\text{Sales Revenues}}{\text{Total Assets}} = \frac{SR}{TA}$) indicates the level of company’s activities (measured by the number of turns in a period of time) and gives an idea whether a firm is generating sufficient volume of business for the size of its investment in assets.

$$ROI = \frac{OP}{SR} \cdot \frac{SR}{TA} = r \cdot a \quad (2)$$

Formula (2) could be presented in another way:

$$ROI = \frac{OP}{SR} : \frac{TA}{SR} = r : \frac{1}{a} \quad (3)$$

The ratio between total assets and sales revenues is also an emanation of turnover, but expressed as duration of one turn. This kind of presenting the company’s turnover enjoys great popularity among business analysts, but in this case it will be used at a later stage for better graphical presentation of the results of the performed research.

Going back to the main competitive business strategies, the cost leadership strategy is most often reflected in lower prices for goods and services, which in turn is associated with smaller profit margins and minimal return on sales. To compensate, when a sufficiently attractive standardized product is available, the company’s return on assets increases, which automatically offsets the lower return on sales. If following the differentiation strategy, the activity in terms of sales is low due to the higher required price of the differentiated product. However, the profit margins appear to be high, which increases the return on sales and compensates for the lower assets turnover. Therefore, the indicator ROI in its “detailed” option provides a basic configuration that can be used to assess the strategic orientation of a company.

It must be noted that simply on the basis of elementary calculation of ROI, even in its extended version, conclusions on the strategy pursued by a company cannot be drawn. It is necessary to correlate the company’s indices with those of other companies producing identical product. Only after a comparison with competitors the strategic orientation of an investigated company can be determined.

Provided that the model of ROI comprises three indices and each index depends on individual input parameters, the combinations of the variants appear to be numerous. The main of them can be synthesized in the following four directions:

1. Two companies can achieve the same level of ROI, pursuing radically different strategies. If the one has lower profitability index, but higher assets turnover ratio than the other, then the first one follows a cost leadership strategy, while the second is probably more oriented towards differentiation.
2. At a different level of ROI, but when the assets turnover indicators for the compared companies coincide, the cost leadership strategy can be identified by the lower level of the “return on sales” indicator, whereas the “dividing line” between the CLS and the DS will pass through the average value of r calculated for the investigated bundle of companies.
3. At a different level of ROI, but when the indicators “return on sales” for the compared companies coincide, the low-cost strategy could be recognized by the higher value of the “assets turnover” indicator. The “dividing line” between the CLS and the DS will pass through the average value of a calculated for the investigated bundle of companies.
4. At different levels of all three indices comprising ROI, the strategic orientation of a company can be established after transforming of the input data in direction towards one of the three previous variants. Since this option is more complicated for use, but is also most common, we will pay it particular attention.

Firms belonging to an industry or a particular sector can serve as a starting analytical aggregate. This study focuses on the Bulgarian sector “11.05 Manufacture of beer” (according to the NACE Rev. 2 classification of the EU; BRRA), which consists of six manufacturing companies: Zagorka, Kamenitza, Boliarka-VT, Carlsberg, Lomsko pivo, and Britos. According to information obtained from the companies, the first five of them offer products on the market with a wide range of quality and price (e.g. they pursue a mixed strategy), while the last (Britos) is oriented at the moment to manufacturing of a differentiated product. Data about the product orientation of the different manufacturers by beer marks are presented in the following table (Table 1):

Table 1 Manufacturers of beer, trademarks and their strategic orientation

Company	Trade marks	Orientation
Zagorka	Zagorka Lager	Standardized
	Zagorka Rezerva	Differentiated
	Ariana	Standardized
	Heineken	Differentiated
	Stolichno	Differentiated
Kamenitza	Kamenitza	Standardized
	Astika	Standardized
	Burgasko	Standardized
	Slavena	Standardized
	Stella Artois	Differentiated
	Beck's	Differentiated
	Staropramen	Differentiated
	Hoegaarden	Differentiated
	Leffe	Differentiated
Boliarka	Boliarka	Standardized
	Scweik	Differentiated
	Kaltenberg Pils	Differentiated
	Warsteiner Premium	Differentiated
	Balkansko	Standardized
	Diana Lagerv	Standardized
	Diana Export	Differentiated
Carlsberg	Shumensko	Standardized
	Pirinsko	Standardized
	Carlsberg	Differentiated
	Budweiser Budvar	Differentiated
	Erdinger Weiss	Differentiated
Lomsko pivo	Tuborg	Differentiated
	Almus	Differentiated
	Mizia	Standardized
	Dunavsko	Standardized
Britos	Gredberg	Standardized
	Shopsko pivo	Standardized
	Britos	Differentiated

Source: Companies' websites, 2015

The aim of the analysis is – based on data for ROI and its constituent indices – to determine the overall strategic orientation of the companies from the beer manufacturing sector (in the case of Britos the purpose is to check, if it really sticks to the differentiation strategy).

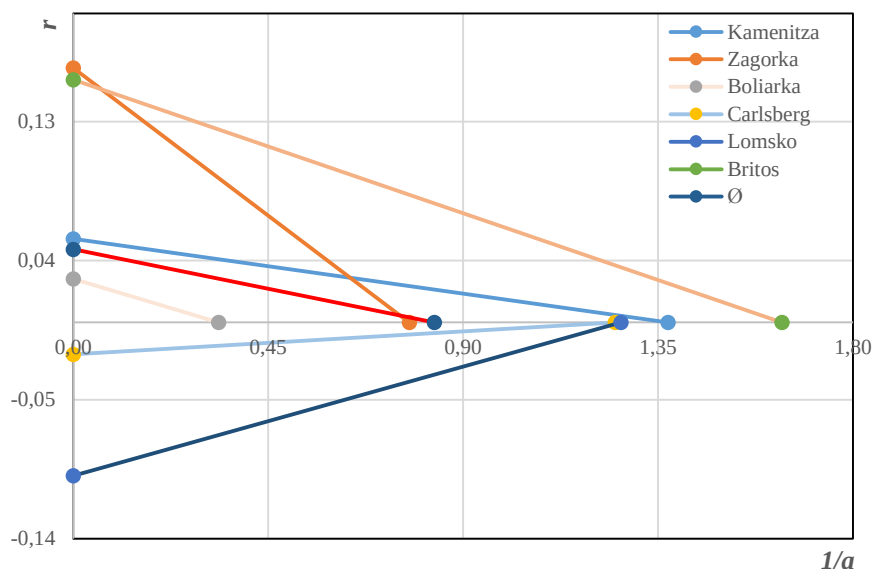
To calculate ROI together with its component indices, information for *OP*, *SR* and *TA* is required. Sources of data are the official financial statements of the manufacturers, published in the Commercial Register. The collected financial information on the investigated companies, together with the calculations of *r*, *1/a* and ROI (using the formula 3), are presented in the following table (Table 2.)

Table 2 Financial data and calculations of indices by breweries

Indicators	Abbr.	Zagorka	Kamenitza	Boliarka	Carlsberg	Lomsko	Britos	Ø Value
Sales revenues	SR	145954	141508	27133	98698	10131	11351	72463
Operating profit	OP	24031	7657	765	-2035	-1005	1783	5199
Total assets	TA	113190	194310	9106	123445	12810	18570	78572
Return of sales	<i>r</i>	0.1646	0.0541	0.0282	-0.0206	-0.0992	0.1571	0.0474
Assets turnover	<i>1/a</i>	1.3731	0.7755	0.3356	1.2507	1.2644	1.6360	0.8334
Return on investment	ROI	0.2123	0.0394	0.0840	-0.0165	-0.0785	0.0960	0.0561

Source: Own elaboration based on data published in the Bulgarian Commercial Register (www.brra.bg)

The information from Table 2 and the figure created with its help (Figure 3) cannot be utilized directly for analytical purposes, since the analysts will be facing a combination of different index values constituting ROI, i.e. variant 4 from the above-mentioned.



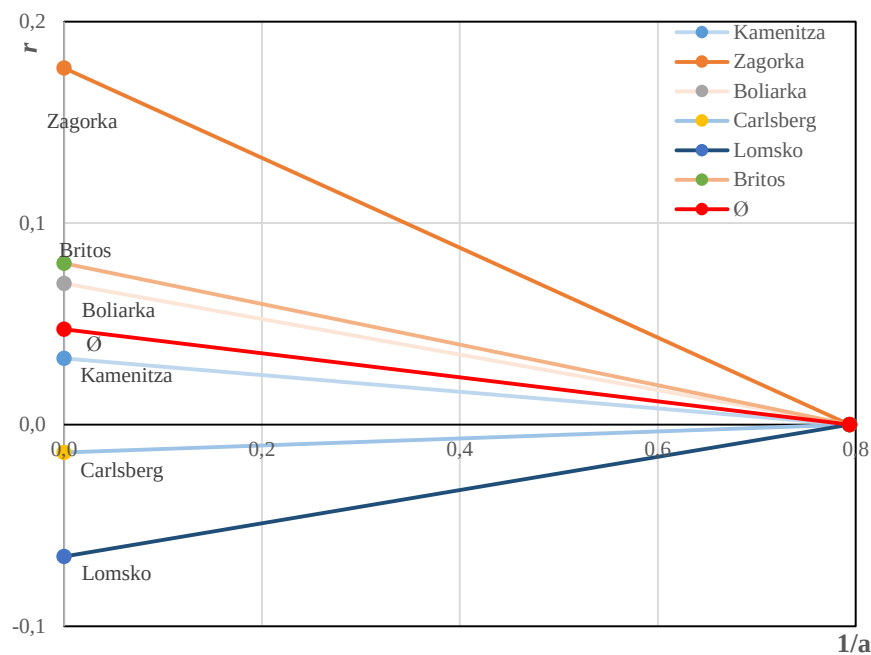
Source: Own elaboration

Figure 3 Profitability-Turnover Matrix (unadapted)

As has already been mentioned, the strategic orientation of individual companies can be identified after transformation of the input data towards one of the three other combinations, discussed above. For this purpose, the data and the related figure will be modified (without changing the logic of use of the indicators needed for evaluation) to meet the requirements of option 2.

Assuming that the assets turnover index for all companies remains fixed and is supposed to be equivalent to the average value of the sector, then the profitability index *r* by companies can be recalculated with the help of mathematical ratios related similarities. The graphical adaptation is achieved by a parallel movement of the lines connecting the *r* and *1/a* of the investigated companies. The result is a sorted chart (Figure 4), which allows for more accurate generalization about the strategic orientation of the surveyed companies.

The data analysis shows that Zagorka, Britos and Boliarka stick mainly to a differentiation strategy, while Kamenica is oriented mainly to a low-cost strategy. Also, these companies show a positive ROI, which indicates success in pursuing a strategic orientation. The „dividing line” between the two alternative strategies is the line connecting the average values of the indices *r* and *a*. For the companies with a negative ROI one should assume that they are “stucked in the middle”.



Source: Own elaboration

Figure 4 Profitability-Turnover Matrix (adapted)

Conclusion

An obvious advantage of the proposed “profitability–turnover” matrix for analysing the strategic orientation of a company is the usage of objectified information, which is readily available and can be extracted from official sources. Although at times the explanation of the principal idea seems circumstantial, the understanding and usage of the instrument are relatively easy, and the results remain clear and unambiguous. The setting-up of the analysis does not involve significant material and intellectual resources, which is a prerequisite for its repetition over time. A disposal over time series will ultimately give the analysts a chance to outline important trends concerning competitors' strategies, which in turn will improve the process of updating the company's competitive strategy in the future.

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External stakeholders of higher education institutions in Poland. The regulatory environment

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Abstract

Purpose of the article This article discusses the problem of cooperation of higher education institutions (HEIs) in Poland with external stakeholders representing the regulatory environment.

Methodology/methods The defined objective was realized through the analysis of legislative acts and literature as well as an empirical study. The study was conducted in the form of survey addressed to rectors of HEIs supervised by the Minister of Science and Higher Education.

Scientific aim The aim of the article is to present the issue of institutional framework regulating Polish HEIs. The Author presents results of study which aim was to determine the extent to which HEIs perceive regulatory institutions as their stakeholders, as well as, what features of these institutions, according to stakeholder theory, are essential in them being recognized by HEIs as their stakeholder.

Findings As shown, the Minister of Science and Higher Education, the Polish Accreditation Committee, independent accreditation organizations, and professional self-government are key regulators of HEIs' activities. Relations with them are taking the form of clearly identifiable contracts (in the case of the Ministry and the Polish Accreditation Committee), as well as the form of assumed identifiable contracts (in the case of professional self-government and independent accreditation organizations). The results have clearly shown that in the first group of stakeholders the relations are mapped by the attributes of power, legitimacy, and urgency. In the second group we observe variability between types of HEIs on recognition of external stakeholders and on identifying the attributes that determine their relations with stakeholders.

Conclusions Cooperation of HEIs with external stakeholders representing the regulatory environment, in the light of formal conditions and changes in the environment of HEIs, is important dimension of their activities. Stakeholder theory provides useful reference tools for analysing a system of higher education in terms of HEIs relations with their environment.

Keywords: higher education institutions, regulatory environment, stakeholder theory, external stakeholders

JEL Classification: D21, D22, D86, I23, I28, L14

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Introduction

In the ongoing discussion on the role of education in social and economic development, higher education institutions (HEIs) feature as change initiators which accept challenges arising due to both globalization and local needs. It is HEIs' role to contribute to a sustainable development of regional communities, nations, and global society by developing appropriate educational offers and curricula. In the present conditions, often referred to as based-knowledge economy, it is an essential role of HEIs to contribute to the development of the region they operate in, and they do so through their research and expertise, as well as by being involved in the regional cooperation network. HEIs are also the environment which shapes attitudes and viewpoints essential to fulfil professional and social roles. Last but not least, a HEI is a specific kind of an organization which has at its disposal and manages material and financial resources, due to which it contributes to developing the area in which it operates. Accordingly, HEIs constitute a special type of organization. On the one hand, their essence is in public service, on the other hand, they are also business organizations, though not perceiving profit as their primary aim, but obliged to operate efficiently and judiciously in an economic sense.

This paper analyses relations between Polish HEIs and their external stakeholders representing the regulatory environment. This cooperation, in the light of formal conditions and changes in the environment of HEIs, is becoming an increasingly important dimension of their activities. In this paper, external stakeholders of a HEI are defined as individuals or groups of people from its surrounding environment who, intentionally or unintentionally, may influence the accomplishment of its mission and implementation of its strategy. A HEI, through its activities, may also exert influence on external stakeholders.

This study consists of four parts, preceded by an introduction, and followed by a summary. Based on the analysis of legal acts and relevant literature, the article presents the issue of institutional framework regulating Polish HEIs, and institutions which regulate HEIs' activities according to external governance in the Polish higher education system. Such institutions include the Minister of Science and Higher Education, the Polish Accreditation Committee, independent accreditation institutions, and institutions of professional self-government. We also discuss the area of HEIs' activities affected by the regulations analysed. In the empirical part, the Author presents preliminary results of her study. The study has determined the extent to which HEIs perceive regulatory institutions as their external stakeholders, as well as what features of these institutions are essential in them being recognized by HEIs as their external stakeholder. Discussion of the study's results is preceded by a presentation of the stakeholders' theory in its normative, descriptive, and instrumental dimensions, as well as the possibility of its application to analyzing relations of HEIs with their regulatory environment. The Author's experience of being a head of a HEI's organizational unit from 2008 to 2013 serves as the background to the present analysis. In this article, terms 'university' and 'HEI' are used interchangeably to refer to all higher education institutions in Poland.

1 Institutions of HEIs' regulatory environment in Polish higher education system

Two paradoxically contradictory processes can be observed in European systems of higher education. On the one hand, there is a decline in state control combined with an increasing autonomy of universities. On the other hand, we witness government reforms which lead, in some areas, to even stronger regulations than it was the case in the past (Thieme, 2009).

Major factors that give rise to these changes are structurally similar to each other all over the world. They are pushing systems of higher education towards the market, or quasi-market, and competition, as well as, somewhat paradoxically, towards increased state regulation combined with a relative decline in public funding (Kwiek, 2011). Above all, these factors include declining public funding and unfavourable demographic processes.

Polish HEIs, despite the autonomy guaranteed in some areas by the Constitution of the Polish Republic and the Higher Education Act (The Higher Education Act of 31 July 2005, hereinafter referred to as the Act), are subject to specific regulations included in the Act itself and the accompanying executory provisions.

At present, HEIs are also subject to market mechanisms which result from over-supply of higher education services we experience in Poland, as well as from a declining demographic growth and resulting changes in population age structure. Market and competition have become important factors which verify HEIs' accomplishment of educational, research, and financial goals. This is setting competition planes of both public and private HEIs (Iwankiewicz-Rak, 2007).

In Poland, the state-university relation may be defined as evaluative, which means that the Legislator is abandoning the policy of enforcing top-down instructions and universities are granted, at least in theory, more independence and responsibility for their operations. However, direct state regulation of universities is being replaced by evaluation and a system of financial instruments. The literature often refers to this extent of HEI's independence as *conditional autonomy* (cf. Antonowicz, 2005).

As has been mentioned, basic regulations concerning setting up HEIs and their activities in Poland are included in the Higher Education Act. Article 4 Paragraph 1 of the Act provides that a university is autonomous in all areas of its operations, according to the Act's stipulations. This autonomy is reflected in the rights to:

- independent and free formulation of a mission and development strategy,
- independent passing of a statute, a fundamental act which determines internal governance of a university,
- establishing student recruitment policy,
- defining learning outcomes, plans of study and curricula, taking into account generic descriptors defined by the Minister of Science and Higher Education for fields of learning (education oriented at learning outcomes being one of the results of implementing the principles of the Bologna Process by the Polish higher education system),
- independent decisions concerning organization and condition of work,
- conferring academic degrees and professional titles.

The compliance of universities with the existing law and their internal governance is enforced by The Minister of Science and Higher Education, which is a chief government authority responsible for two areas: science and higher education. The Minister's key competencies include:

- granting authorization for providing university courses (after consulting the Polish Accreditation Committee), suspending or withdrawing authorization for providing university courses,
- keeping register of private HEIs and associations of private HEIs,
- setting out conditions to be met by university organization units in order to provide courses in a specific field, level, and profile,
- specifying conditions on setting up university branches and off-campus university units,
- specifying: conditions to be met by curricula; descriptions of learning outcomes in a given field, as well as of model learning outcomes in selected fields of study and, so-called educational standards in the case of some fields, e.g. medical or teaching professions,
- defining fundamental rules and criteria for programme and institution evaluation,
- following up professional careers of alumni.

Quality of higher education constitutes a special area of HEIs' activities which is regulated by a public policy of states in the European Higher Education Area. In Poland, the Polish Accreditation Committee evaluates quality of education through curriculum and institution assessment in all HEIs which are subject to the Higher Education Act. The Polish Accreditation Committee's positive assessment of a given course of studies is a precondition for running this course. During institutional evaluation, the Committee takes into consideration whether a university unit, in most cases a faculty (Resolution 1/2011 of the Polish Accreditation Committee of 10 November 2011 on the Statute of the Polish Accreditation Committee):

- has a development strategy in place,
- applies an effective internal quality assurance system,
- uses a coherent description of educational aims and learning outcomes for doctoral programmes and non-degree post-graduate programmes offered,
- applies an efficient and credible system to verify and confirm the achievement of its strategic aims and learning outcomes,
- conducts scientific research,
- participates in national and international exchange of students, doctoral students, and research and teaching staff,
- cooperates with national and international academic institutions and other institutions and enterprises,
- provides adequate research, learning and financial support for students and doctoral students in the process of attaining learning outcomes,
- has in place a coherent system of internal regulations underpinning the quality assurance process which is in conformity with the national legislation.

Complementary accreditation, albeit not in lieu of the activities of the Polish Accreditation Committee, is carried out by independent accreditation institutions. Such accreditation is initiated by HEIs interested in enhancing the quality of education as well as in its evaluation. Independent accreditation bodies and their policies and evaluation criteria are created by foundations, associations and committees set up independently by HEIs or their associations. Major independent accreditation institutions in Poland include: the Foundation for the Promotion and Accreditation of Economic Education, FORUM Association of Management Education, the Accreditation Commission of Universities of Technology, the Accreditation Commission of Universities of Agriculture, the University Accreditation Commission, the Accreditation Committee of Polish University Medical Schools.

Independent accreditation is voluntary and it is granted for a specified period of time. This means that it is HEIs' discretionary decision to implement the standards required by an independent accreditation institution and to undergo its assessment procedures. By gaining such accreditation, a HEI undertakes to enhance its education standards, research, teaching facilities, staff policies, internal organization, and cooperation with the external environment (external stakeholders).

Professional self-government, also referred to as a chamber or professional corporation, is another type of an external stakeholder from the regulatory environment. Professional self-government is an organization established according to relevant legislation and whose members are individuals who perform professions of public trust, such as solicitors, nurses or midwives. As it is professional self-government's obligation to monitor due diligence standards in such professions, it is necessary for such professional bodies to cooperate with HEIs. By way of illustration, in accordance with the Self-government of Nurses and Midwives Act of 1 July 2011, the chamber of nurses and midwives carries out the following duties:

- providing opinions and recommendations on professional training,
- providing opinions on professional training programmes,
- running further training programmes for nurses and midwives,
- education, research and publishing activities,
- cooperation with scientific associations, HEIs and research and development units in Poland and abroad.

To conclude, the institutions presented above are of key importance to HEIs' activity in Poland in as much as they set out conditions for HEIs' operations in fundamental academic missions: education, research, and relations with the social and economic environment, referred to as the third mission of a HEI. In a way, the existence of these institutions also conditions an internal organization of a HEI. As pointed out by Grunig and Repper (1992), an organization has relations with stakeholders when actions of an organization or its stakeholder affect the other party. As has been shown, in the Polish system of higher education, relations with the regulatory environment are based on state legitimization as well as social legitimization, including professional environment standards.

2 Application of stakeholder theory to analysing relations of HEIs with their environment

Stakeholder theory is one of instrumental theories in organizational strategy. As Paliwoda-Matiolańska (2009) points out, this theory has been the main trend in developing management sciences for over twenty five years. This is due to the fact that stakeholder theory perceives management as resulting from aspirations, aims and activities of various groups of interest, the perspective which finds confirmation in observations and practical experience (Trocki and Grucza, 2004).

The concept of stakeholders was initiated by R.E. Freeman's critique of the concept of a predominant role of shareholders which prevailed in science and practice in the 80s of the 20th century. Freeman suggested a concept of a stakeholder, i.e. a subject with an interest (stake) in a given organization, thereby interested to be involved in its management processes. According to Freeman's definition, a stakeholder is any group or individual who can affect or is affected by the achievement of the organization's objectives (Trocki and Grucza, 2004).

In the literature, there is no consensus on a coherent definition of the term *stakeholder*. In a narrow perspective, it is understood that stakeholders are those groups without whom an organization would not survive (Mitchell, Agle and Wood, 1997). A wider perspective, represented by Ch. Laszlo, assumes that they are both individuals and groups who intentionally or unintentionally contribute to generating assets by an enterprise (cf. Szumniak-Samolej, 2013).

Donaldson and Preston (1995) point out at three aspects of stakeholder theory: descriptive, normative, and instrumental. The first one describes the characteristics and behaviour of an organization. The normative aspect is based on moral and philosophical attitudes of an organization, and is expressed in norms and rules. This aspect takes into account the fact that stakeholders are legitimate to exert influence on an enterprise and they generate expectations which have significant value.

The instrumental aspect can be used to achieve goals of an organization due to the fact that it takes into account the connection between the outcome of an organization's activities and the management of stakeholders. Notably, the greatest controversy surrounds the normative aspect of the theory as this aspect includes moral and social responsibility considerations in the nature of an organization's existence. Another problematic issue may arise in distinguishing between the instrumental dimension (addressing the question of *by what means? with what result?*) and the descriptive dimension (*in what way?*).

As shown in Table 1, in all of its dimensions, stakeholder theory provides useful reference tools for analysing a system of higher education in terms of HEIs relations with their environment.

Table 1 Normative, descriptive, and instrumental perspectives of stakeholder theory with reference to the system of higher education in Poland

General rationale	System of higher education
Normative dimension	
- stakeholders have legitimacy to exert influence on an organization's activities - stakeholders' expectations are of significant and real value - fundamental aims of an organization's existence are interpreted, including moral and philosophical implications for managing an organization	- education if of intrinsic value - higher education brings benefits to society - higher education in Poland is partly of public goods (merit goods) character, and is provided (partly) by the public sector - students in public and private education are partly supported by academic and social grants - public HEIs are publicly financed institutions, thus society, as a final stakeholder, has the right to expect educational mission to be diligently fulfilled, research to be conducted, and community service performed (idea of accountability) - employers (i.e. indirectly society) benefit from added value of alumni, their knowledge, skills, and social competence; accordingly their expectations are both significant and real
Descriptive dimension	
- organization is perceived as a combination of common and competitive interests, each of which having some significant and real value - in its empirical aspect, stakeholder theory describes and explains the nature of an organization's activities, as well as presenting a real way of managing an organization	- university is a unique entity of a social system (by combining educational mission with conducting research, making its results available, contributing to local and regional development). In its material sense, it is a specific organization: it possesses human, material, financial, and information resources, which requires management strategies combine fulfilment of social mission with maintaining organizational efficiency and effectiveness characteristic of business organizations - HEI exists in a specific and dynamic environment, - HEI is subject to regulations which impose external and internal governance - HEIs are granted considerable organization and programme autonomy - HEIs' relations with external stakeholders are usually maintained through distinctively identifiable contract or assumed identifiable contracts
Instrumental dimension	
- this dimension provides grounds for analysing relations, or lack thereof, between management of stakeholders and obtaining specific results by an organization - it allows to identify relations, or lack thereof, between stakeholders' expectations and prospects for an organization achieving their goals - in a traditional perspective, an organization will succeed if it responds to its stakeholders' expectations - taking into account expectations of stakeholders contributes to an organization achieving better results	- relations with environment influence fulfilment of education and research missions (referred to as the first and the second missions of a HEI) - relations with environment constitute the third mission of a HEI - specific results of organizations oriented at cooperation with its environment may be as follows: a number of spin-off or spin-out firms, a number of expert opinions, assessment of the Polish Accreditation Committee, and places in HEIs ranking lists - institutionalized contacts with the environment may evolve into collegial forms such as conventions and trust councils

Source: compiled by the Author; fundamental principles of stakeholder theory based on: Paliwoda-Matiolańska, 2009

The extent to which stakeholders influence an organization and their expectations are taken into account depends on the following three attributes (Paliwoda-Matiolańska, 2009):

- the power a stakeholder exercises to influence an organization (ability to affect behaviour of others),
- legitimacy, i.e. legal, traditional but also moral grounds for relations with an organization,
- urgency, perceived as speed of the management's response to claims and expectations of a stakeholder. This attribute refers to the extent and sensitivity in mutual relations, as well as to the level of their urgency and criticality.

It seems obvious that the more attributes a stakeholder possesses, the bigger their influence on activities of an organization. Having said that, it must be pointed out that attributes ascribed to a given stakeholder are not permanent: a stakeholder may acquire or lose them. Importantly, power, legitimacy, and urgency are of social origin, hence their lack of objectivity.

The criteria based on the attributes of power (perceived as ability to impose our own will in a relationship), legitimacy (understood as formal, legal, social, moral, and traditional relations), and urgency (priority) enable us to identify the following stakeholders (Wachowiak, 2013):

- definitive stakeholders: in possession of all the three attributes, which means that this group is very important (of high salience),
- expectant stakeholders: in possession of two attributes. Depending on the combination of attributes, the following types may be identified: dominant stakeholders with attributes of power and legitimacy, which means that they may make

claims; dangerous stakeholders, with attributes of power and urgency, which means they may be possibly violent; dependent stakeholders, with attributes of legitimacy and urgency, which means that satisfying their claims is contingent upon the power of other stakeholders who may take care of their interests,

- latent stakeholders: in possession of only one attribute. Depending on which attribute they possess, the following categories are identified: dormant stakeholders with attribute of power, of little use to an organization; discretionary stakeholders, with attribute of legitimacy, it is at an organization's discretion whether their claims will be satisfied; demanding stakeholders, with attribute of urgency, not essential for an organization, but potentially troublesome.

It is very difficult, sometimes just impossible, to classify stakeholders as belonging to one of the groups presented: one stakeholder may perform various roles, and stakeholders often establish mutual relations (Wachowiak, 2013). What is more, stakeholders have these attributes in variable intensity. Trocki and Grucza (2004) point out that the significance of stakeholders is defined with reference to a specific situation an organization finds itself in. Accordingly, the map of stakeholders is dynamic, contingent upon a situational context.

The circle of HEIs' stakeholders is much wider than is the case in other organizations (Flazlagić, 2012). Ratajczak (2012) identifies the following external stakeholders of HEIs: the state, business organizations (employers), and future, prospective students. In turn, Salleh and Omar (2013) identify groups which perform direct and indirect roles in managing HEIs: students' parents, sponsors, alumni, representatives of public and private institutions, as well as of the community and government. Minkiewicz (2003) points out that, apart from direct and indirect users of higher education, HEIs stakeholders include various intermediary bodies in contacts between HEIs and the state. In turn, Dymyt (2012) identifies the following external stakeholders: prospective students, alumni, employers, local community, public and self-government administration, independent professional and opinion-forming organizations, businesses and institutions that cooperate with a HEI, the media. In view of the multitude of roles performed by universities in social and economic development of a region and a country, and multiple contexts of the relations themselves, it seems impossible to compile a full and finite list of HEI's stakeholders.

3 Methodology and structure of the study

An empirical study has been conducted in order to identify the extent to which Polish HEIs perceive organizations representing the regulatory environment as their external stakeholders. The study's aim was also to define which attributes of stakeholders, according to stakeholder theory, are treated by universities as decisive ones to establish a relation.

The study covered all the HEIs supervised by the Minister of Science and Higher Education (N: 379). The frame of this study was provided by a list of public and private HEIs currently in operation, which was established basing on:

- Register of private HEIs and associations of private HEIs, accessible in POL-on system (N: 284),
- Register of public academic HEIs (N: 59),
- Register of state vocational HEIs (N: 36).

The study was conducted in the form of individual postal survey (PAPI) addressed to rectors of HEIs, in January and February 2015. In order to achieve optimum response rate, during the process of collecting the data, the respondents were requested to take action by phone and e-mail reminders. Here, the preliminary results of the study are presented. At the time of writing this article, the following number of correctly completed questionnaires was received:

- 26 questionnaires from public academic HEIs, which accounts for 44.04% of the total number of schools in this category,
- 16 questionnaires from state vocational HEIs, which accounts for 44.4% of the total number of schools in this category,
- 35 questionnaires from private HEIs, which accounts for 12.32% of the total number of schools in this category.

4 Results: presentation and discussion

As has been pointed out in the Introduction, this study assumes that external stakeholders of a HEI are individuals of groups of people from its surrounding environment who, intentionally or unintentionally, may influence the accomplishment of its mission and implementation of its strategy. A HEI, through its activities, may also exert influence on its external stakeholders. In accordance with this definition, rectors were requested to specify which regulatory institutions are perceived by them as external stakeholders. The results are unequivocal in this respect: in the majority of cases, HEIs identified the Minister of Science and Higher Education and the Polish Accreditation Committee as their external stakeholders. However, it must be pointed out that public vocational HEIs predominantly identified professional self-government organizations as their regulatory stakeholders, which reflects the specific nature of these schools. In the Polish system of higher education, the predominant role of such schools is to satisfy local, regional demand for graduates in a given field.

These findings concerning vocational HEIs confirm the results of the Author's previous study (Piotrowska-Piątek, 2014), in which the Author analysed HEIs' documents presenting their missions and development strategies, to identify

references to external stakeholders. Another interesting result of the present analysis is the fact that independent accreditation organizations are perceived as stakeholders more frequently by public academic HEIs and private HEIs, as compared to public vocational HEIs. This is probably due to the fact that public academic HEIs and private HEIs are more interested in independent accreditation in order to get a competitive edge in the market of higher education. Detailed findings are presented in Table 2.

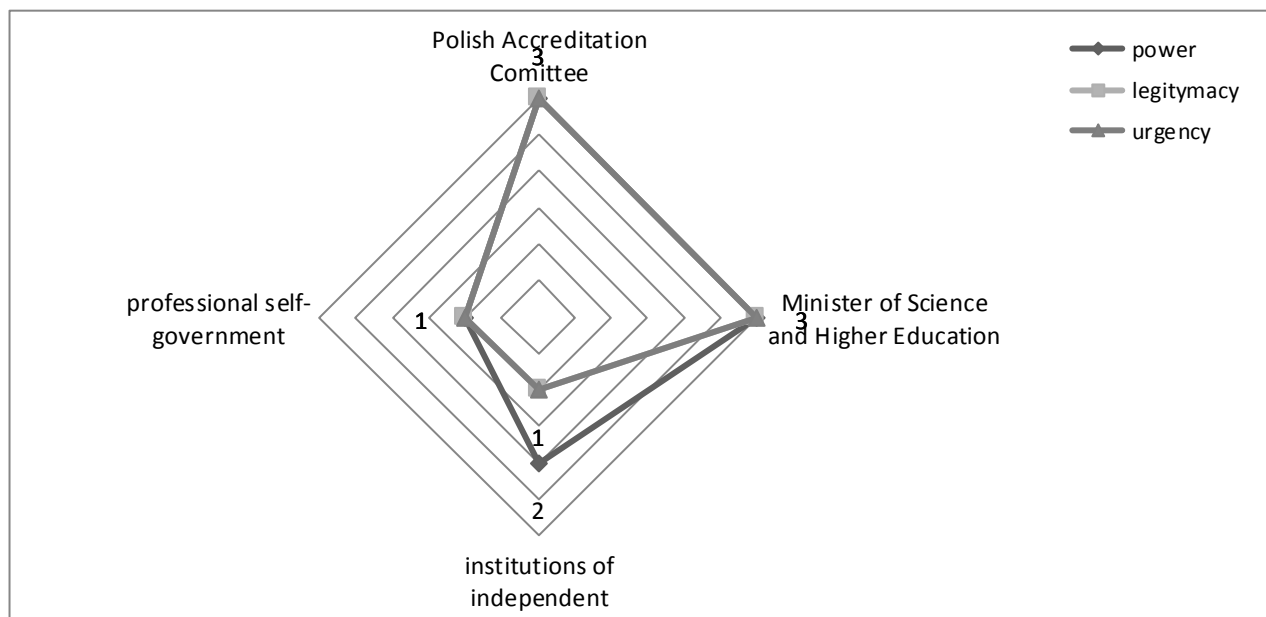
Table 2 Regulatory institutions perceived by HEIs as their external stakeholders, according to types of schools (N: 77)

Type of external stakeholder	Type of HEIs		
	Public (n-26)	HEIs State higher schools of vocational education (n-16)	Private HEIs (n-35)
Minister of Science and Higher Education	69,23%	50%	65,71%
Polish Accredittation Committee	69,23%	50%	60%
Proffesional self-government	57,69%	62,5%	34,29%
Institutions of independent accreditation	38,46%	25%	40%

Source: own research

As discussed in the theoretical part of this article, for a relation (a situation of intentional or unintentional exerting influence or being influenced) between an organization and a stakeholder to take place, it is necessary for a stakeholder to possess attributes of power, legitimacy, and urgency. Accordingly, rectors were requested to estimate the extent to which their external stakeholders were equipped in these attributes, from 1 to 3, with 1 meaning the lowest degree. The questionnaire also allowed for a stakeholder lacking in a given attribute, which was necessary for providing a complete theoretical model. As the findings show, such a case did not occur in practice if an organization was identified as a stakeholder in the first place. The answer breakdown was conducted by using D modal value, and in this way it was estimated what value of a given attribute was most frequently assigned by the respondents.

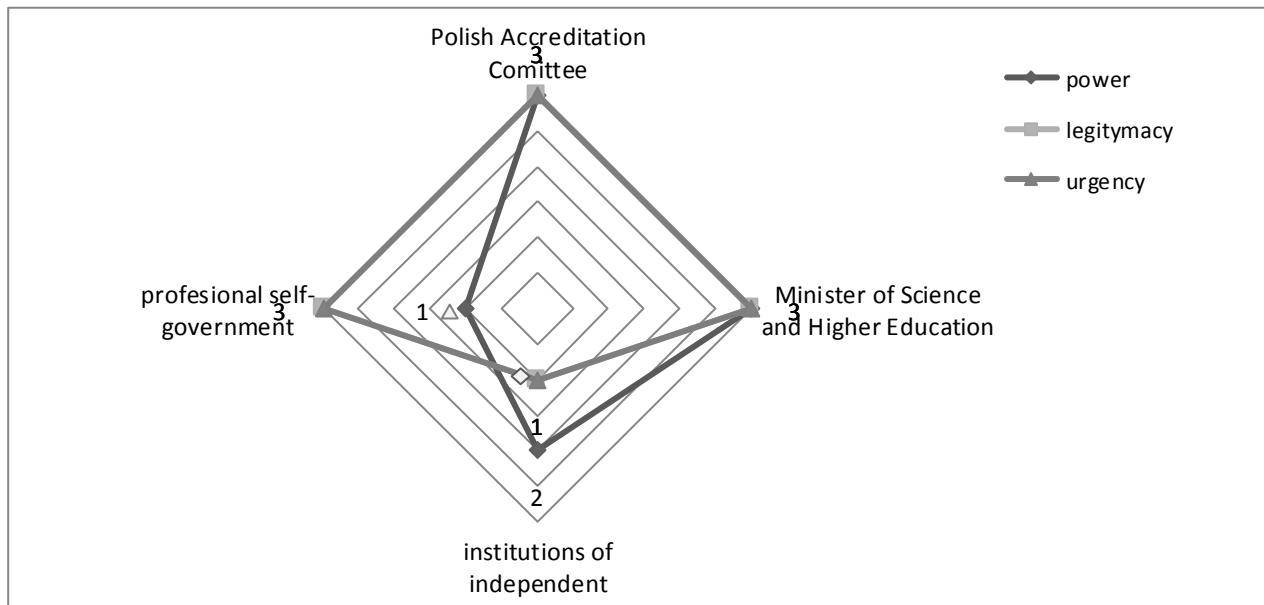
As already mentioned, the Ministry of Science and Higher Education and the Polish Accreditation Committee were most frequently referred to as stakeholders by rectors of public academic HEIs (69.23% in both cases). As shown in Figure 1, rectors assigned the highest degree of all the three attributes to these organizations. As for professional self-government, it was identified as an external stakeholder by 58% of the respondents, with attributes of power, legitimacy, and urgency estimated at level 1, the lowest value in the scale. In the case of independent accreditation organizations, there was more variety in responses, with the attribute of power most frequently estimated at level 2, and the other attributes at level 1.



Source: own research

Figure 1 Regulatory external stakeholders' attributes of power, legitimacy, and urgency, as perceived by rectors of public academic HEIs

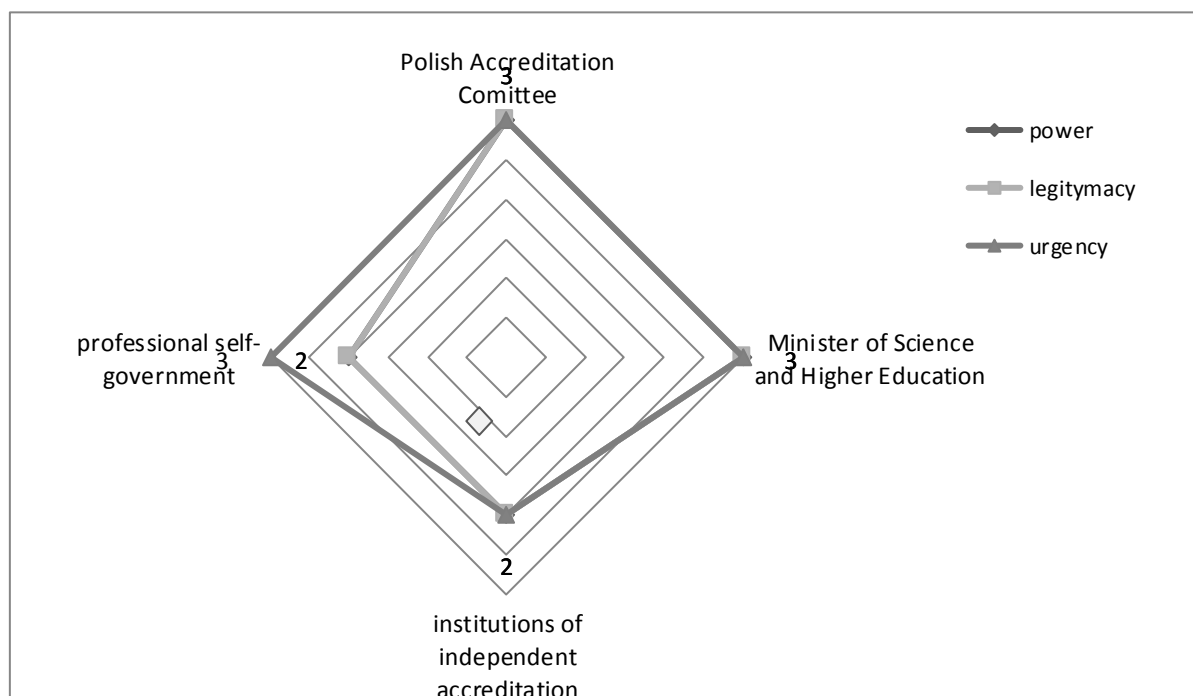
Public vocational HEIs most frequently saw their external stakeholders among professional self-government (62.5%), the Ministry of Science and Higher Education (50%), and the Polish Accreditation Committee (50%). In the case of the last two stakeholders mentioned, the opinion of the rectors of this school category was identical, as was the case in public academic HEIs. As for professional self-government and independent accreditation organizations (identified as an external stakeholder by 25% of the respondents), the values assigned were varied and there was no clear preference for the attributes of power or urgency (bimodal breakdown, Figure 2).



Source: own research

Figure 2 Regulatory external stakeholders' attributes of power, legitimacy, and urgency, as perceived by rectors of public vocational HEIs

Similarly to the other groups, in the case of private HEIs, the Ministry of Science and Higher Education and the Polish Accreditation Committee were most frequently identified as external stakeholders (65.71% and 60% respectively). The attributes of power, legitimacy, and urgency were valued identically as by public HEIs. For professional self-government (34.29%), the modal value for the attributes of power and legitimacy is estimated at 2, while for the attribute of urgency at 3. In the case of independent accreditation organizations (40%), there is no distinctive preference (bimodal breakdown, Figure 3).



Source: own research

Figure 3 Regulatory external stakeholders' attributes of power, legitimacy, and urgency, as perceived by rectors of private HEIs

Conclusion

An increase in the importance of cooperation between independent entities is considered to be among the most significant development trends in the modern mechanisms of creating value. A considerable number of ideas connected with an increasing importance of such cooperation have appeared in research on management and theory of organization. The multitude of suggested mechanisms of coordinating cooperation, theoretical approaches and schools of thought on inter-organizational relations make it difficult to look at the problem of coordination in a holistic way. To analyze inter-organizational relations, one must combine two large theoretical areas: organizations and relations and processes that occur between them. It should also be remembered that organizations and their relations exist in defined contexts. What is more, management of inter-organizational relations requires integration of many sub-fields of management sciences (Koźmiński and Latusek, 2014).

This study discusses the issue of Polish HEIs relations with their external stakeholders from the regulatory environment. It is pointed out in the literature that relations of HEIs and their surrounding environment, especially in social and economic areas, are very important to accomplish the mission of higher education. At the same time, it is difficult to balance the claims made by stakeholders (Hazelkorn, 2004). Neave (2002) points out that in the society of stakeholders, the fundamental relation between institutions of higher education is always conditional in its nature, which in turn enters an element of systemic, inherent instability.

It is observed in Europe, including Poland, that an increase in external stakeholders affecting the process of HEI's management is due to at least four inter-related factors:

- the Legislator's intention to make the system of financing HEIs both enable and force HEIs to raise resources from external entities, such as business. This constitutes the third-source revenue (cf. Wissema, 2009; Clark, 2004),
- processes of implementing changes in the system of higher education connected with joining the European Area of Higher Education and European Research Area,
- challenges posed by the knowledge-based economy,
- policies of HEIs, which see cooperation with their environment as an opportunity to enhance processes of education as well as to conduct research and to make it accessible, thus increasing their market competitiveness.

Our analysis of Polish HEIs relations has focused on stakeholders from the regulatory environment: the Minister of Science and Higher Education, the Polish Accreditation Committee, independent accreditation organizations, and professional self-government. As shown in the analysis of legislative documents presented, these institutions are key regulators

of HEIs' activities. Relations with them are taking the form of clearly identifiable contracts resulting from normative standards of the Polish higher education system (in the case of the Minister and the Polish Accreditation Committee), as well as the form of assumed identifiable contracts resulting from legal normative standards as well as norms of the environment (in the case of professional self-government and independent accreditation organizations). The results have clearly shown that in the first group of stakeholders the relations are mapped by the attributes of power, legitimacy, and urgency. In the second group of stakeholders, we observe variability between types of HEIs on recognition of external stakeholders and on identifying the attributes that determine their relations with stakeholders.

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The effect of European Union structural fund on small and medium enterprises

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Abstract

Purpose of the article This paper seeks to fulfill the following reasons given by OECD (2007) for undertaking evaluation of EU funding programs: which are firstly To establish the impact of policies and programmes, secondly to make informed decisions about the allocation of funds, thirdly show the taxpayer and the business community whether a programme is a cost-effective use of public funds, also to stimulate an informed debate and finally to achieve continued improvements in the design and administration of programmes.

Methodology/methods The review of literature and empirical data collection mostly based on the EU and OECD reports from official EU, OECD, Eurostat and World Bank website and databases

Scientific aim This paper contributes to the discussion about the European Union structural funds and mechanisms and also how they affect SME's. Considering the obvious absence of any critical analysis of the economic effect and viability of the funding programme, this paper serves as a scientific bridge and the beginning of critical study.

Findings Seven main groups of SME development factors have been identified: external factors and internal factors and the most relevant effect of Structural funds on SME development factors are access to capital with non-repayable grants and repayable loans, the focus on employability and training of employees/human resources/entrepreneurs and several priority areas which are focused on environment or infrastructure (funded by ERDF and the Cohesion Fund)..

Conclusions There can only be ample efforts towards understanding the European Union policies towards Small and Medium Enterprises, as across the EU28 in 2013, some 21.6 million SMEs in the nonfinancial business sector employed 88.8million people and generated €3,666 trillion in value added. Expressed another way, 99 out of every 100 businesses are SMEs, as are 2 in every 3 employees.

Keywords: Small and Medium Enterprises, European Union, Structural Fund, Funding policy

JEL Classification: O1, O4, R1, F55, H87

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Introduction

Policy makers in the European Union continue to grapple on how to attain sustainable local and regional development. As there is a need for the improvement of quality of life in cities and rural areas alike has represented one of the pressing objectives of the economic and social policy in the period 2007–2013. According to the EU Annual Report on European SMES (2013/2014) across the EU28 in 2013, some 21.6 million SMEs in the nonfinancial business sector employed 88.8million people and generated €3,666 trillion in value added. Expressed another way, 99 out of every 100 businesses are SMEs, as are 2 in every 3 employees and 58 cents in every euro of value added. This illustrates how critical SMEs are, and since the EU structural funds is considered to be the most significant external financial resources that can be accessed by small and medium enterprises within the EU countries. The need to understand how the European funding mechanism work, the nature of the funds and the manner in which they are mobilized and deployed to achieve the development objectives of the EU buttresses the relevance of this research.

On the one hand, the continued availability of development funds to Small and medium enterprises within the development framework of the EU are much desired but there would certainly be a need to justify the effect of the EU funding. According to European Commission (2013) Affordable and appropriate access to finance is an important issue not only for newly-starting and growing companies, as well as for existing ones who wish to expand their operations. It is thus significant for all businesses who strive to gain productivity, foster innovation, and hence create employment and wealth for the wider national and international benefits. Access to finance is crucial especially for small and medium-size firms, due to their largest share in terms of number of enterprises, turnover and employment in the business economy. In recent years some evidence showed that lenders shied away from financing them because of the nature of the assets of these companies.

Small and Medium Enterprise (SME's): SME's are defined by the European Commission as having less than 250 persons employed. They should also have an annual turnover of up to EUR 50 million, or a balance sheet total of no more than EUR 43 million (Commission Recommendation of 6 May 2003). These definitions are important when assessing which enterprises may benefit from EU funding programmes aimed at promoting SMEs, as well as in relation to certain policies such as SME-specific competition rules.

Table 1 Classification of small and medium enterprises by the European Union

Company Category	Employees	Turnover	Balance sheet total
Micro	Micro business	< 10	< €2 million
Small	Small business	< 50	< €10 million
Medium –sized	Medium-size business	<250	< €43 million

Source: European Commission annual report on European SMEs 2012/2013

In justifying the essence for this research it is possible to consider the following reasons given by OECD (2007) for undertaking evaluation of EU funding programs:

- ❖ To establish the impact of policies and programmes.
- ❖ To make informed decisions about the allocation of funds.
- ❖ To show the taxpayer and the business community whether a programme is a cost-effective use of public funds.
- ❖ To stimulate an informed debate
- ❖ To achieve continued improvements in the design and administration of programmes

These reasons highlight the many benefits from carrying out evaluation of structural funding as it affects SME's and the knowledge that can be gained and utilized from such research.

European Union SME policies

According to the Method cost manual SME policy is defined as: Publicly funded measures aimed at existing firms older than three years with up to 249 employees (IPREG, 2011). And European Union (2012) states that small or medium-sized enterprise (SME may benefit from EU funding through grants, loans and, in some cases, guarantees.

Support is available either directly (EU grants) or through programmes managed at national level. SMEs can also benefit from a series of non-financial assistance measures such as the business support services provided by the Enterprise Europe Network or the Intellectual Property Rights (IPR) helpdesk. And since a large fraction of EU funds are managed at national or regional level, the national, regional or local authorities often provide the necessary information and support facilities.

The 1990s saw the development of what could be termed as “new modes of governance” in European policy making practices as well as studies. And although this was not entirely without predecessors, the most popular mode been propagated of all the “new” modes are the Open Method of Coordination, which made its debut at the Lisbon European Council in 2000. Attributed with possessing a perceived flexibility and inherent nonintrusive nature the Open Method of Coordination had been praised and advocated by those who proposed it has being a good and adequate way to address new competitive challenges which the European Union was being faced with in more recent decades. The Open Method of Coordination has been considered the instrument of choice for a number of diverse, complex, and domestically sensitive policy areas where formal harmonization appeared politically unlikely but where collective action would be beneficial, including higher education. For Open Method of Coordination proponents, the new instrument is “the best of all worlds”: combining decentralization of policy formation and decision making with enhanced cooperation at the EU level (Szyszczak, 2006). There are therefore several Forms of financing within the European union funding mechanism which are available for companies looking for money to fund project and this may be in the form of Grants — awarded to co-finance specific projects or objectives, usually through calls for proposals. Also for firms looking for opportunities to sell services or goods there is a possibility of the Public contracts option — which is awarded through calls for tenders (public procurement) to buy services, goods or works in order to ensure the operations of EU institutions or programmes (European Union, 2012).

A number of studies have been done to increase our knowledge of SME policy measures in different countries and regions, see e.g. Audretsch, Grilo and Thurik (2007) who created an eclectic model for analyzing and describing different policy measures, while Lundström (2005) created methods on how to analyze entrepreneurship policy in different countries including a conceptual model to describe the complexity of such a policy area. However, most of other studies are concentrating on the supply side that means describing and analyzing different measures taken (IPREG, 2011).

Now, fundamentally, one has to ask about the reasons behind the use of public resources for investments in different policy measures. There are some basic arguments of the necessity of such investments. One is that there is a need of a complementary policy approach besides a more general economic policy. Two examples could be that a country or a region has too few start-ups or a lack of innovative entrepreneurs or SME's which the driving force behind sustainable growth is. Baumol (2009), Shane (2009) and Aldrich (1999) have discussed different perspectives concerning the problem of few innovative entrepreneurs and SME's and the difficulties of identifying and supporting these enterprises. Concerning the problem of few start-ups Reynolds (2007) has traced nascent entrepreneurs in US over time identifying the number of successful cases. One result is the vast number of nascent entrepreneurs who will fail to start a business. Such results are raising questions concerning what type of potential enterprises should be supported. Now, arguments for a complementary policy will be that we know that start-ups and early stages companies are of great importance for net employment increase in a society as well as that innovative entrepreneurship is one driving force for economic growth.

The overall issue is about analyzing the importance and effect of cohesion policy, It is important however to realize that policy measures taken in the entrepreneurship and SME policy areas are complementary to a more general economic policy. The policy measures taken for different sub-areas, can be characterized as marginal policy measures, since invested resources are limited, meaning that only a minor part of all entrepreneurs is supported (IPREG, 2011). This type of policy measure is therefore a complement to measures taken in a more general perspective such as taxes, interest rates or social security systems. This will also mean great difficulties to evaluate the impact of such marginal policy measures.

European Union Structural Funding policy and SME's

Managing the money therefore and the power to decide on awarding grants/contracts are divested as follows:

- EU Member States Over 76 % of the EU budget is managed by national and regional authorities. This includes the Structural Funds and agricultural subsidies.
- European Commission Roughly 22 % are centrally managed programmes (e.g. research, education, health, youth actions).
- Third countries and international organisations Third countries and international organisations (e.g. the Red Cross, UN) manage 2 %.

Direct aid to SMEs to co-finance their investments is only possible in the economically less developed regions (the so-called convergence regions).

- In other regions, priority is given to actions having a high leverage effect (e.g. entrepreneurship training, support services, business incubators, and technology transfer mechanisms, networking) rather than direct aid to individual SMEs.
- The European Commission, the European Investment Bank and the European Investment Fund have launched a joint initiative to improve access to finance for SMEs in less developed regions. The initiative, Joint European Resources for Micro to Medium Enterprises (or JEREMIE), enables Member States and regions to use part of their Structural Funds to provide guarantees for loans as well as equity and venture capital finance to SMEs. (European Union, 2012).

European Union Structural Funds in the period of 2007 – 2013

Three main Funds work together to support economic development across all EU countries, in line with the objectives of the cohesion policy for the strategic funding period of 2007-13 as shown in the figure 2 below: the objectives of convergence, regional competitiveness and employment and also European territorial cooperation are covers by the ERDF, ESF and the Cohesion funds.

Objectives	Structural Funds and instruments		
Convergence	ERDF	ESF	Cohesion Fund
Regional Competitiveness and Employment	ERDF	ESF	
European territorial Cooperation	ERDF		
	infrastructure, innovation, investments etc.	vocational training, employment aids etc.	environmental and transport infrastructure, renewable energy
	all Member States and regions	Member States with a GNI/head below 90%	

Source: European Union regional policy

Figure 1 Objectives, Structural Funds and instruments 2007-2013

European Regional Development Fund (ERDF). The ERDF aims to strengthen economic and social cohesion in the European Union by correcting imbalances between its regions. The fund focuses its investments on several key priority areas. This is known as ‘thematic concentration’ which included; low-carbon economy; Innovation and research; The digital agenda; and most importantly the Support for small and medium-sized enterprises (SMEs); **European Social Fund (ESF).** The ESF invests in people, with a focus on improving employment and education opportunities across the European Union. It also aims to improve the situation of the most vulnerable people at risk of poverty. And the ESF investments cover all EU regions with a lot of focus been on Human capital development, support and assistance of small and medium enterprises as well as Youth Employment Initiatives. **Cohesion Fund (CF).** The Cohesion Fund is aimed at Member States whose Gross National Income (GNI) per inhabitant is less than 90 % of the EU average. It aims to reduce economic and social disparities and to promote sustainable development.

European Union SME Performance Review

The SME Performance Review is conducted on an annual basis and happens to be one of the main tools the European Commission uses to monitor and assess countries' progress in implementing the Small Business Act (SBA). On the one hand, The SBA strives to foster SME development and remove obstacles to SME growth. It does not constitute a legal requirement, but a series of guidance measures that can be holistically adapted to suit each country's specific needs while simultaneously achieving a degree of coordinated progress across the EU and there are ten underlying principles which are focal to the review and they are:

1. Entrepreneurship: Creating an environment in which entrepreneurs and family businesses can thrive and entrepreneurship is rewarded.

2. Second Chance: Ensuring that honest entrepreneurs who have experienced bankruptcy are promptly given a second opportunity to succeed.
3. Think Small First: Designing rules modelled on the “Think Small First” principle.
4. Responsive Administration: Making public administrations responsive to the needs of SMEs.
5. State Aid and Public Procurement: Adapting public policy tools to suit SME needs - facilitating SMEs’ participation in public procurement and ensuring better access to State Aid for SMEs.
6. Access to Finance: Facilitating SMEs’ access to finance and developing a legal and business environment conducive to the specific requirements of SMEs, including timely payments in commercial transactions.
7. Single Market: Helping SMEs to benefit more from the opportunities offered by the Single Market.
8. Skills and Innovation: Promoting the enhancement of skills in the SME workforce and all forms of innovation.
9. Environment: Enabling SMEs to transform environmental challenges into economic opportunities while acting sustainably.
10. Internationalisation: Encouraging SMEs to benefit from the growth of global markets and supporting them in this pursuit.

The SME Performance Review brings together comprehensive information on the policy activity to implement the SBA and the economic performance of SMEs in EU28 Member States, as well as 9 other partner countries.

SME support instruments and their relevance for SME development factors

Four joint initiatives were developed by the European Commission (Directorate General for Regional Policy) in co-operation with the European Investment Bank group and other financial institutions in the framework of the 2007-2013 programming period in order to make cohesion policy more efficient and sustainable. Two of them refer to the promotion of financial engineering instruments Joint European Resources for Micro to Medium Enterprises (JEREMIE) and Joint European Support for Sustainable Investment in City Areas (JESSICA), and the other two; Joint Assistance to Support Projects in European Regions (JASPERS) and Joint Action to Support Micro-finance Institutions in Europe (JASMINE) operate as technical assistance facilities.

Results

In this research, the literature review of academic studies and researches relating to Small and Medium Enterprises in Europe, European Union Structural funds for the 2007-13 programme is carried out. In the theoretical part, the valuable theories and literature and policies relating to Structural funds and Small and Medium Enterprises, Small and Medium Enterprise concept definition and Typology was done. And empirical data collection is mostly based on the EU and OECD reports (as annual and progress reports) and official EU, OECD, Eurostat and World bank website and databases are considered as complementary sources. Conversely, analysis of data using both general content analysis methods and the representation of information from scientific literature and reports are adopted to answer the research questions and correspond to the research objective.

There are Seven main groups of SME development factors have been identified: external factors (socio-economic, market-economic, political/institutional) (Moulin and Thue Li, 2005, OECD, 2007, The Gallup Organization, 2007); and internal factors (internal organisation, capital, human resources and external positioning) and a review of a list of SME-relevant development factors extrapolated from a variety of literature (OECD 2007, Tocher and Rutherford, 2009, Fischer, 2011).

And the table 2 below provides an overview of the most relevant effect of Structural funds/Cohesion Policy instruments on SME development factors. They can be summarized as follows and shown in Table 3 below:

- The factor supported by Cohesion Policy instruments is access to capital with non-repayable grants and repayable loans. Additional financial engineering instruments also influence this factor (European Union, 2011).
- Another very important support is the focus on employability and training of employees/human resources/entrepreneurs, this no doubt assists SMEs in many ways. Furthermore, it assists employees who work in SMEs that would not be able to get employer-financed training in addition to that it provides enterprises with skilled workers.
- According to European Commission (2011) several priority axes are focused on environment or infrastructure (funded by ERDF and the Cohesion Fund). And exempting a couple of cases they are not directly targeted at SMEs, but as a drop-off effect SMEs and enterprises benefit from contracting or subcontracting of public contracts and/or from the availability of public infrastructure. With the improvement of infrastructure, the level of competitiveness of a region or city enhanced and along with it the general market and socio-economic environment needed for SME to thrive.
- By provision of specialized support via advice, networks or infrastructure availability much can be done to help improve the positioning of enterprises and increase access to information.

Table 2 Structural funds/Cohesion Policy instruments on SME development factors

External factors				Internal factors				
Instruments		Socio- Economic factors	Market-economic factors	Political/ institutional factors	Internal organisation	Capital	Human resources	External positioning
Cohesion Fund 2007- 2013		Access to infrastructure						
ERDF Convergence		Access to infrastructure, information, capital	Innovation/ technology, market uncertainty		Knowledge management	Costs, Technology transfer	Skills, management competences, knowledge	Marketing, access to distribution
ERDF Competitiveness and employment		Access to infrastructure, information, capital	Innovation/ technology, Market uncertainty		Knowledge management	Costs, Technology transfer	Skills, Management competences, knowledge	Marketing, access to distribution
ERDF ETC		Access to information	Innovation/ technology	Regulatory system	Knowledge management	Technology transfer		Networking and cooperation, access to distribution
European Fund ESF	Social	Labour market support			Knowledge management		Skills, management competences, loss of employees, knowledge	
JASMINE		Access to capital, information						
JEREMIE		Access to capital, information						
JESSICA		Access to infrastructure, information		Public contracting				
JASPERS		Access to information		Public contracting				

Source: Adaptations from European Commission reports

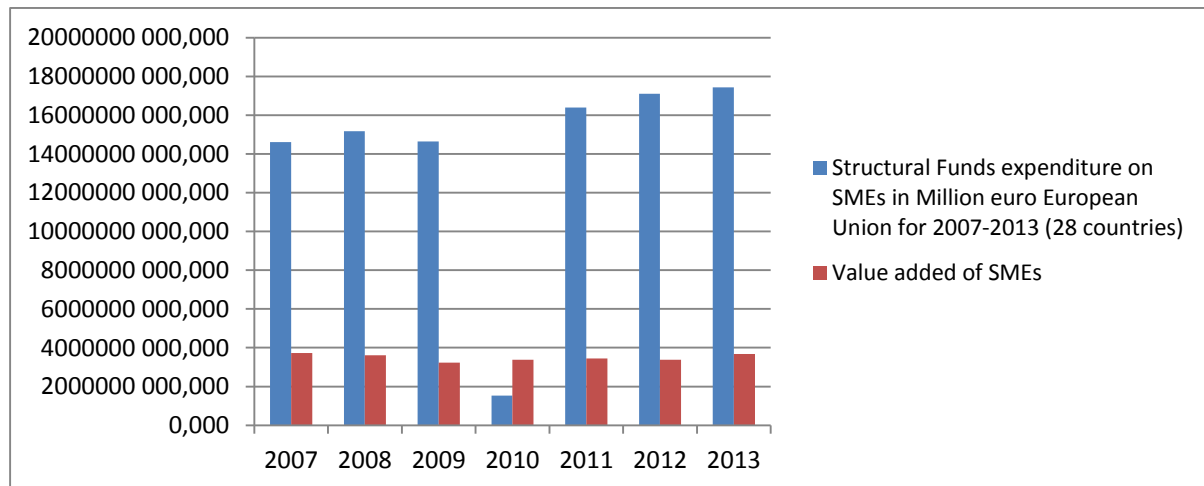
To properly analyse the data gotten from several data bases and report about the EU Structural funds and SMEs and then deduce some explanation as to the effect of the Structural fund on Small and Medium Enterprises, the dataset contained in the Table 3 below are regarded as the most important empirical measures they include: Structural Funds expenditure on SMEs in European Union for 2007-2013 (28 countries), Number of SME, Value added of SMEs, Employment of SMEs and Gross domestic product at market prices European Union (28 countries) over the Structural funding period of 2007-2013.

Table 3 Structural fund expenditure on SME, Number of SME, Value added, Employment and GDP

Variables/time	Structural Funds expenditure on SMEs in European Union for 2007-2013 (28 countries)	Number of SME	Value added of SMEs	Employment of SMEs	Gross domestic product at market prices European Union (28 countries)
2007	14,605,632,700	21,120,000	3,720,000,000	90,610,000	12,473,648,900,000
2008	15,170,159,300	21,220,000	3,620,000,000	90,810,000	12,548,545,700,000
2009	14,648,587,500	19,966,000	3,234,000,000	87,646,000	11,815,746,600,000
2010	1,526,972,800	20,912,000	3,374,000,000	87,529,000	12,337,153,600,000
2011	16,399,134,500	20,720,000	3,440,000,000	87,427,000	12,711,206,800,000
2012	17,109,226,100	20,356,000	3,386,000,000	86,815,000	12,959,735,700,000
2013	17,435,984,600	21,570,000	3,670,000,000	88,840,000	13,068,600,500,000

Source: European commission reports

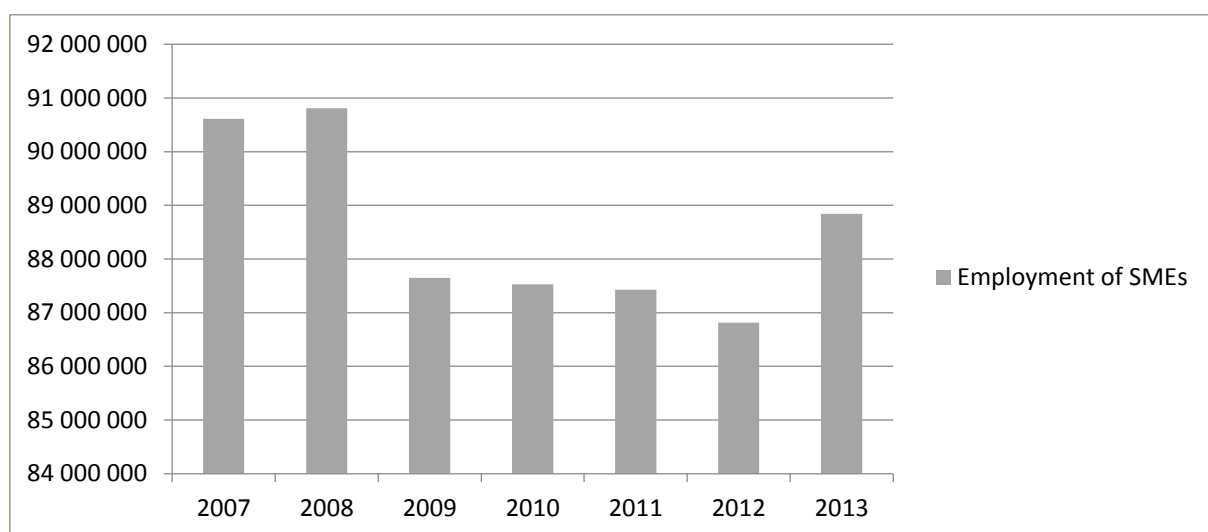
One of the important variables that is used to measure the extent of effectiveness of the EU structural funds on SMEs in the European union is the amount of value added to the economy, With great emphasis been placed on value added in the EU Parliament report (2011). And in analysing the effect of structural funds, a comparative analysis of the structural funds expenditure and the value added of SMEs reveals that Structural Funds expenditure on SMEs in 2007 was just over 14 billion euros and increased to 15 billion in 2008. But with the financial crisis in 2009 the European commission had to sharply adjust expenditure on SME within its budget hence dropping spending to just over 1 billion, but with re-evaluation of EU SME policy in 2010, expenditure was increased to over 16 billion and further to 17.1 billion and 17.4 billion in 2012 and 2013 respectively. And as shown in the Figure below, the value added for SMEs have been rather stable between a maximum of 3.7 billion in 2007 and a minimum of 3.2 billion in 2009 with the value added just showing signs of full recovery from the financial crisis in 2013 by adding just over 3.6 billion to the economy.



Source: Own work, 2015

Figure 2 Structural Funds expenditure on SMEs and Value added of SMEs in European Union for 2007-2013

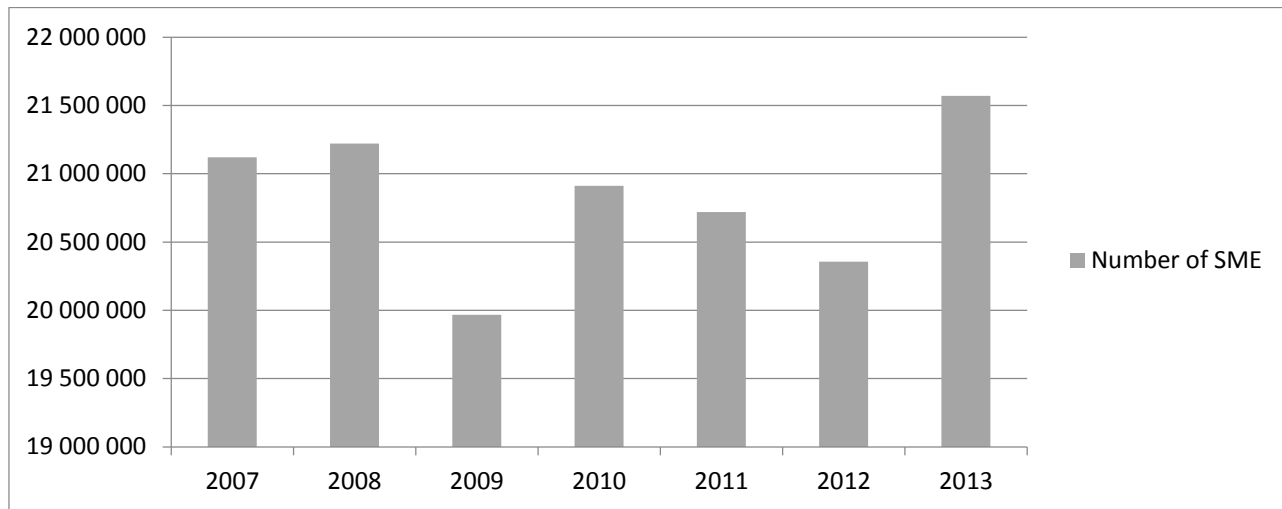
Job creation remains one of the fundamental policy concerns of the European Union structural fund and funding the SMEs aims to create employment and employment increased between 2007 and 2008 from 90.6 million to 90.8 million. 2009 saw a sharp drop to 87.6 million and reduced further to 87.5 million in 2010. There was a further decrease to 87.4 million in 2011 to the lowest of 86.8 million in 2012 but we can however observe a sharp spike in SME employment in 2013 to about 88.8 million.



Source: Own work, 2015

Figure 3 Employment of SME Period 2007-2013

The number of SMEs in Europe in 2007 was about 21.1 million and increased to about 21.2 million in 2008 and this number dropped to about 19.9 million in 2009. There was an increased to the number of SMEs in 2010 to 20.9 million and it dropped slightly in 2011 to 20.7 million and in 2011.



Source: Own work, 2015

Figure 4 Number of SME in Period 2007-2013

The number of SMEs as can be seen in the Figure 4 above continued to fall and was at 20.3 million in 2012 this and there was a sharp increase in 2013 when the number of SMEs was about 21.5 million.

Conclusion

There can only be ample efforts towards understanding the European Union policies towards Small and Medium Enterprises and the detailed scrutiny of the Cohesion policy anchored by the Structural funds support brings to bare the relevance of this study, even against the backdrop of the EU Annual Report on European SMES (2013/2014) across the EU28 in 2013, where it was recently made known that some 21.6 million SMEs in the nonfinancial business sector employed 88.8million people and generated €3,666 trillion in value added. Expressed another way, 99 out of every 100 businesses are SMEs, as are 2 in every 3 employees and 58 cents in every euro of value added. This illustrates how critical SMEs are and reflects the And since the EU structural funds is considered to be the most significant external financial resources that can be accessed by small and medium enterprises within the EU countries. Since The Structural Fund at inception (which are basically the European regional Development Fund, European Social Funds and to some extent the Cohesion Fund) was created to address increasing interregional disparities that at the time put the social and economic cohesion of the EU in jeopardy. The theoretical findings of this paper pointed revealed that direct aid to SMEs to co-finance their investments is only possible in the economically less developed regions (the so-called convergence regions). And that In other regions, priority is given to actions having a high leverage effect (e.g. entrepreneurship training, support services, business incubators, and technology transfer mechanisms, networking) rather than direct aid to individual SMEs. Further to this, The European Commission, the European Investment Bank and the European Investment Fund launched a joint initiative to improve access to finance for SMEs in less developed regions. The initiative, Joint European Resources for Micro to Medium Enterprises (or JEREMIE), enables Member States and regions to use part of their Structural Funds to provide guarantees for loans as well as equity and venture capital finance to SMEs. (European Union, 2012).

The SME development factors have been identified as: external factors (socio-economic, market-economic, political/institutional); and internal factors (internal organisation, capital, human resources and external positioning) and a review of a list of SME-relevant development factors extrapolated from a variety of literature has been carried out to reveal that the following: firstly The factor supported by Cohesion Policy instruments is access to capital with non-repayable grants and repayable loans, which in itself is an adopted strategy to foster growth of SME activity within the EU and Secondly, focus on employability and training of employees/human resources/entrepreneurs, this no doubt assists SMEs in many ways as it is somewhat expensive to fund trainings and carry out entrepreneurial trainings both on a large and small scale. And finally, by provision of specialized support via advice, networks or infrastructure availability much can be done to help improve the positioning of enterprises and increase access to information.

Finally, more empirical results include one of the important variables that is used to measure the extent of effectiveness of the EU structural funds on SMEs in the European union which is the amount of value added to the economy. With results showing that value added for SMEs have been rather stable between a maximum of 3.7 billion in 2007 and a minimum of 3.2 billion in 2009 with the value added just showing signs of full recovery from the financial crisis in 2013 by adding just over 3.6 billion, The behaviors of SME employment, Number of SMEs and GDP have also graphed and discussed to provide further insights.

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Credit Spread VaR and ETL

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Abstract

Purpose of the article is estimation the risk highly non-normal and autocorrelated risk factor measured by Value at Risk (VaR) and Expected Tail loss (ETL). Based on the Markit iTraxx Europe index we make VaR estimates using different parametric linear VaR models and we compare them with ETL.

Methodology/methods Presented empirical study use static and dynamic methodology for computing Value at Risk and corresponding estimates of the ETL. We will consider two assumptions about the index dynamics: the daily changes are i.i.d. (normal or non normal) or autocorrelated. Using the same data we obtain different estimates of the parametric linear VaR and corresponding estimates of the ETL over a risk horizon of 10 days at the 99% confidence level. We compare parametric VaR with VaR computed using historical simulations. We use maximum likelihood method to calibrate appropriate distribution parameters.

Scientific aim is to show that the parametric linear VaR and ETL model is applicable to Markit iTraxx Europe index and to find the appropriate statistical distribution (non normal, skewed or leptocurtic) that will adequately describe risk related to our data.

Findings In the context of the linear VaR model we have used simple formulae that may be applied to estimate the standalone and marginal VaR and corresponding ETL. One important benefit of our framework is that it identifies risk related to our data.

Conclusions In this paper we have used general formulae for VaR and ETL under the assumption that returns have normal or non normal distributions. We have concluded that the historical data are highly non normal, with positive skewness and extremely high positive excess kurtosis. Significant negative autocorrelation was caused by extreme depression. Therefore normal model VaR or ETL are inappropriate. Empirical study shows that the leptokurtic and/or skewed distributions better describe ETL as VaR.

Keywords: Value at Risk, Expected Tail Loss, leptocurtic distribution, skewed distribution, normal mixture distribution

JEL Classification: G10, G17, C13, C15

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Introduction

Credit spreads are important financial tools that serve as indicators of economic progression, investment decisions, trading and hedging. Their role has become more significant for the European fixed income markets since the introduction of the Euro, which reshaped the mechanics of the financial environment. The introduction of single currency provided the means for a pan-European economic growth and crossborder development, liberalized a vast inflow of capital which was once fragmented into different currencies, and provided the dynamics of cross-border investments around a unified legislative framework (Gabrielsen, 2010).

Credit default swap indices are highly liquid financial instruments and they are efficient to trade due to a standardisation of terms and legal documentation. They are seen as a cost-efficient way to trade portions of the market and are supported by all major dealer banks, buy-side firms and third parties. Rules, constituents, coupons and daily prices for the credit indices are available publicly from www.markit.com. Investors have also been attracted by the fact that these indices can be priced more easily than a basket of cash bond indices or single name CDS (Nolan, Sproehnle, 2011), (Stowe, 2010).

The main subject of the paper is to show that the parametric linear VaR and ETL model is applicable to the credit spread risk factor and to find the appropriate statistical distribution (non normal, skewed or leptocurtic) that will adequately describe risk related to the analysed data.

The paper is organized as follows. Next chapter describes risk measures and formula for parametric linear VaR and ETL under assumptions of the different distributions. Case study is presented in chapter 2. Chapter 3 gives discussion and Conclusion ends up our paper.

1 Risk Measures

The key tasks of the risk management is risk quantifying of the uncertainty in the future value of a portfolio. This quantification is usually achieved by modeling the uncertain pay-off as a random variable, to which then a certain function is applied. Such functions are usually called risk measures (Föllmer, Scheid 2008).

Artzner et al. (1997, 1999) developed the theory of coherent risk measures as follows: If X and Y are the future values of two risky positions, a risk measure ρ is coherent if it satisfies properties:

$$\rho(X) + \rho(Y) \leq \rho(X + Y), \quad (1a)$$

$$\rho(tX) = t\rho(X), \quad (1b)$$

$$\rho(X) \geq \rho(Y), \text{ if } X \leq Y \quad (1c)$$

$$\rho(X + n) = \rho(X) - n, \quad (1d)$$

for any number n and positive number t (Dowd, 2002).

The most known risk measure is Value at Risk (VaR). The VaR is known from 1993, when it was recommended by the Group of Thirty (G-30). VaR defines a level of loss that one is reasonably sure will not be exceeded. VaR does not tell us about the extent of the losses that could be caused in the event that the VaR is exceeded (Alexander, 2008), (Dowd, 2002). VaR is the quantile of the distribution measured in dollars or euros, defined as:

$$VaR_{h,\alpha} = F^{-1}(\alpha), \quad (2)$$

where F^{-1} is the inverse of the cumulative probability distribution $F(\Delta V_h)$ of the changes in the value ΔV_h of a given portfolio over a fixed time horizon h and α is pre specified probability (confidence level) such as 0.01 or 0.05 (see (Rauning, Scheicher, 2008), (Bohdalová, Greguš, 2013), (Jorion, 2006), etc.). VaR is a measure oriented to „tail events“ and tell us about losses exceeding VaR that should occur with probability α over the next h trading days. VaR may be inconsistent under some conditions. VaR of the portfolio can be greater than sum of subportfolios VaRs, for example when we merge portfolios. It means VaR is not sub-additive risk measure (conditions (1a) is not fulfilled) and therefore we can not use the sum of risks measured using VaR as a conservative estimate of combined risk.

Alternative coherent risk measure is the conditional VaR or Expected Tail Loss (ETL) that gives expected value of the loss when it exceeds VaR (Artzner et al. 1997, 1999), (Dowd, 2002), (Jorion, 2003, 2006), (Alexander, 2008), (Yamai, Yoshida, 2005).

The ETL is the expected value of losses, L , if we get a loss in excess of VaR:

$$ETL = E[L | L > VaR] \quad (3)$$

The VaR tells us the most we can expect to lose if a bad (i.e., tail) event does not occur, and the ETL tell us what we can expect to lose if a tail event does occur (Pflug, 2000), (Dowd, 2002).

1.1 Parametric Linear VaR Formula under some distributions

Let X_{ht} are h -day returns or changes of the portfolio. Then the 100 α % h -day VaR estimated at time t is

$$VaR_{ht,\alpha} = \begin{cases} -x_{ht,\alpha} & \text{as a percentage of the portfolio value } P_t \\ -x_{ht,\alpha} P_t & \text{expressed in value terms} \end{cases} \quad (4)$$

where $x_{ht,\alpha}$ is a lower α quantile of the distribution of X_{ht} , i.e. $P(X_{ht} < x_{ht,\alpha}) = \alpha$. Linear parametric VaR is derived in (Jorion, 2001, 2003), Alexander (2008), Dowd (2002). We give here formula for 100 α % h -day parametric VaR with uncorrelated or autocorrelated return or changes of the first order ρ :

$$VaR_{h,\alpha} = \sqrt{\tilde{h}} F^{-1}(1-\alpha) \sigma_1 - h \mu_1, \quad (5)$$

where μ_1, σ_1 are daily mean and standard deviation respectively, h is the horizon and $\tilde{h}$ is the adapted horizon assuming autocorrelation of the first order.

$$\tilde{h} = h + 2 \frac{\rho}{(1-\rho)^2} \left[(h-1)(1-\rho) - \rho(1-\rho^{h-1}) \right], \quad (6)$$

Equality $\tilde{h} = h$ is fulfilled when returns/changes don't autocorrelate.

We obtain normal parametric VaR if $F^{-1}(1-\alpha) = \Phi^{-1}(1-\alpha)$ is a $(1-\alpha)$ quantile of the normal distributions in formula (5).

Student's t VaR is obtained using (5) with

$$F^{-1}(1-\alpha) = \sqrt{\nu^{-1}(\nu-2)} t_{\nu}^{-1}(1-\alpha), \quad (7)$$

where ν is degree of freedom.

Note that $\sqrt{\nu^{-1}(\nu-2)}$ is standard deviation of the Student's t distribution for degree of freedom ν greater as 2 (Dowd, 2002).

There is not explicitly formula for computing $(1-\alpha)$ quantile $F^{-1}(1-\alpha)$ of the mixture distributions. In this paper we assume mixture distribution composed from two normal distributions or from Student's t and Normal distribution. This quantile can be computed using iterative approximation method (Alexander, 2008). We have used Wolfram Mathematica software to determine these values.

1.2 ETL Formula under some distributions

Let the random variable X denotes a discounted h -day return. Then ETL is defined as

$$ETL_{h,\alpha}(X) = \sqrt{\tilde{h}} \alpha^{-1} \phi(F^{-1}(\alpha)) \sigma_h - h \mu_h, \quad (8)$$

where ϕ and F denote the density and distribution functions. $F^{-1}(\alpha)$ is the α quantile of the standard normal distribution and $\phi(F^{-1}(\alpha))$ is the height of the standard normal density at this point (Dowd 2002), (Alexander, 2008).

ETL based on normal distribution $N(\mu_h, \sigma_h^2)$ of the random variable X is given by formula (8) when ϕ and F denote the standard normal density and distribution functions.

ETL based on Student's t distribution with mean μ_h , standard deviation σ_h and degree of freedom ν is given by (8) with

$$\phi(F^{-1}(\alpha)) = (\nu-1)(\nu-2+x_{\alpha}(\nu)^2) f_{\nu}(x_{\alpha}(\nu)) \quad (9)$$

where $x_{\alpha}(\nu)$ denotes the α quantile of the Student's t distribution having zero mean, unit variance and ν degree of freedom. $f_{\nu}(x_{\alpha}(\nu))$ is the value of its density function at that point (Alexander, 2008).

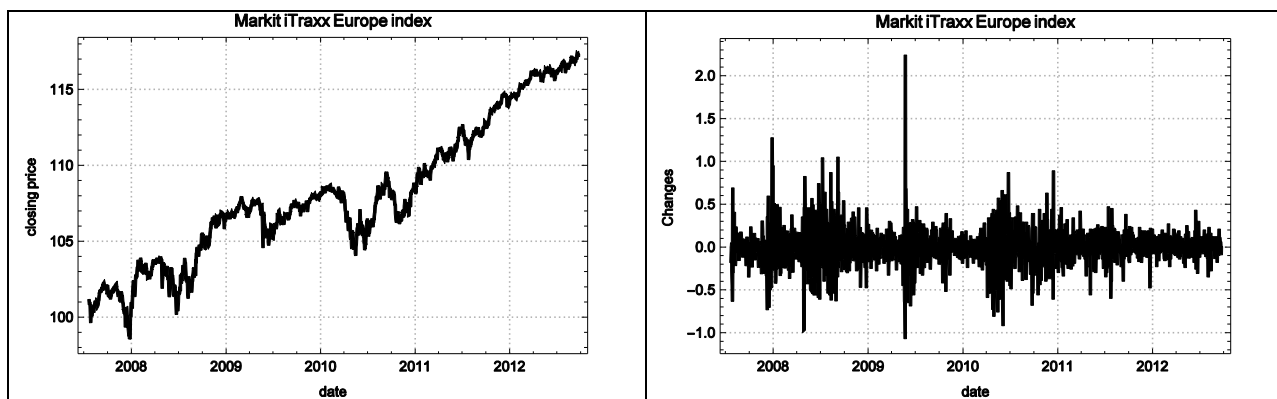
2 Case study

The European Markit iTraxx indices trade 3, 5, 7 and 10-year maturities, and a new series is determined on the basis of liquidity every six months (Markit, 2013). Our research sample covers closing prices Markit iTraxx Europe index. Our sample period ranges from July 17, 2007 to March 3, 2015 and comprises 1890 trading days. The data source is Deutsche bourse <http://www.boerse-frankfurt.de>.

The Markit iTraxx Europe index closing price series is shown in Figure 1. This index comprises 125 equally-weighted European single firm investments. Every six months a new series for each of the iTraxx indices is introduced in which defaulted, merged, sector changed or downgraded entities are replaced by the next most liquid ones. The effects of the five credit crises are visible on the Figure 1. The prices were at a historical low in August 2007 and in September 2008.

Next crisis followed in April 2009, May 2010 and August 2010. The largest deviation was reflected in April 2009 (see Figure 1, changes or first differences of the closing prices). The data was divided into period that begun after the big crisis in September 2008 and after the last crisis in May 2010. Table 1 shows the sample descriptive statistics for changes (first differences of the closing prices) based whole analyses period (19.07.2007-03.03.2015), period after the crisis in the year 2008 (24.10.2008-03.03.2015) and period after the last crisis in the year 2010 (07.05.2010-03.03.2015). Table 1 shows approximate standard errors and the ratio of the statistics to its standard error, based on 1889 (1581 respectively 1219) data points. All statistics except the mean and autocorrelation parameters for the whole data period and mean for the period October, 24, 2008 – March, 3, 2015 are highly significant at significance level 5% (the ratios of the statistics to its standard error are greater as quantil $z_{0.975}=1.96$ of the normal distribution). These values are denoted by asterisk. We have significant positive skewness and kurtosis for all periods. Autocorrelation is negative in each period and highly significant for both after crisis periods. The mean price changes are close to zero. The standard deviation of 0.2151 basis points per day is the highest for all sample periods. This volatility reflects two crisis periods included in the data set.

The annualized volatility of the index depends on the assumptions about dynamics. The autocorrelation for the whole analyzed period (Period A) is not significant and therefore volatility 0.67993 reflects i.i.d. assumption (see Table 2). The autocorrelations for periods B and C are significantly negative, therefore we obtain a lower volatilities: 0.57539 (for the period B) or 0.63381 (for the period C) basis points per annum comparing with annualized volatilities based on i.i.d. assumptions (see Table 2). Periods B and C are periods reflected impact of the crisis to the changes of the Markit iTraxx Europe index.



Source: Own work, data: <http://www.boerse-frankfurt.de>

Figure 1 Markit iTraxx Europe index (Closing prices, Changes)

Table 1 Descriptive statistics for Markit iTraxx Europe index

	Statistics	Estimate	Standard Error	Ratio
<i>Period A</i> : 19.07.2007-03.03.2015 N = 1889 data points	Mean	0.0085	0.0049	1.7310*
	Standard Deviation	0.2151	0.0001	3778.0
	Skewness	0.6068	0.1381	4.3958
	Kurtosis	12.3668	0.5522	22.395
	Autocorrelation	-0.0219	0.0230	-0.9535*
	Cramér-von Mises <i>p</i> -value		0.0000	
<i>Period B</i> : 24.10.2008-03.03.2015 N = 1581 data points	Mean	0.0098	0.0053	1,8545*
	Standard Deviation	0,2097	0,0001	3162,0
	Skewness	0,6861	0,1509	4,5470
	Kurtosis	13,729	0,6036	22,747
	Autocorrelation	-0,0501	0,0251	-1,9954
	Cramér-von Mises <i>p</i> -value		0.0000	
<i>Period C</i> : 07.05.2010-03.03.2015 N = 1219 data points	Mean	0.0095	0.0057	1,6796*
	Standard Deviation	0,1982	0,0001	2438,0
	Skewness	0,8303	0,1718	4,8314
	Kurtosis	18,782	0,6874	27,322
	Autocorrelation	-0,0944	0,0285	-3,3114
	Cramér-von Mises <i>p</i> -value		0.0000	

Source: Own work, data: <http://www.boerse-frankfurt.de>

Table 2 Annualized volatility for Markit iTraxx Europe index changees

	<i>Period A</i>	<i>Period B</i>	<i>Period C</i>
Annualized volatility, based on iid assumption	0.67993	0.62661	0.66309
Annualized volatility, based on autocorrelation	0.66664	0.57539	0.63381

Source: Own work, data: <http://www.boerse-frankfurt.de>

2.1 VaR and ETL Estimation

In our empirical analysis we assume simple linear exposure with 100000 EUR to the daily changes in the Markit iTraxx Europe index. Different VaR and ETL estimates will be based on normal, Student *t*, normal mixture and Student *t*-normal mixture distributions. Our focus is to model risk arising from the choice of the risk factor distribution. We have based all estimates of the risk on the same sample. We use three range samples described in the previous chapter (periods A, B, C). We take into account the whole period A, the period after the crisis in 2008 (period B) and the period after the crisis in 2010 (period C).

Table 3 Student *t* distribution parameters for Markit iTraxx Europe index changees

	μ	σ	ν	Cramér-von Mises <i>p</i> -value
<i>Period A</i>	0.0100	0.1365	3.0681	0.649
<i>Period B</i>	0.0124	0.1240	3.1193	0.636
<i>Period C</i>	0.0114	0.1330	3.0726	0.692

Source: Own work, data: <http://www.boerse-frankfurt.de>

Table 4 Normal mixture parameters for Markit iTraxx Europe index changees

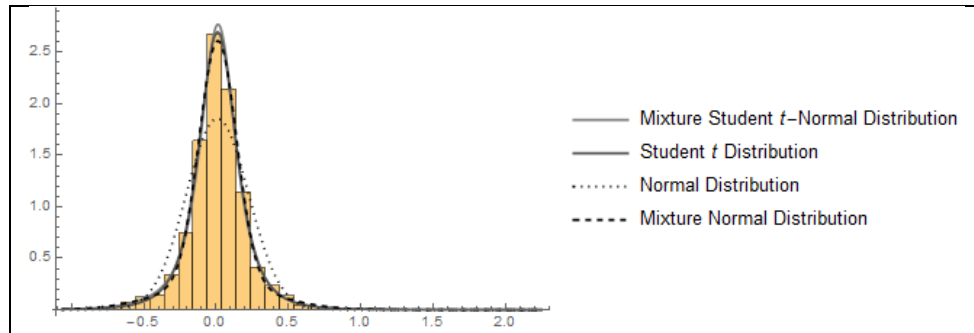
	π	μ_1	σ_1	μ_2	σ_2	Cramér-von Mises <i>p</i> -value
<i>Period A</i>	0.2394	-0.0010	0.3745	0.0116	0.1288	0.529
<i>Period B</i>	0.1846	-0.0172	0.3796	0.0156	0.1236	0.544
<i>Period C</i>	0.2450	-0.0025	0.3626	0.0138	0.1244	0.529

Source: Own work, data: <http://www.boerse-frankfurt.de>

Table 5 Student t -Normal mixture parameters for Markit iTraxx Europe index changes

	π	μ_1	σ_1	ν_1	μ_2	σ_2	Cramér-von Mises p -value
Period A	0.8775	0.0131	0.1239	3.3734	-0.0434	0.3314	0.742
Period B	0.4237	0.0007	0.2131	5.1579	0.0171	0.1054	0.671
Period C	0.4595	0.0028	0.2317	6.0696	0.0148	0.1066	0.662

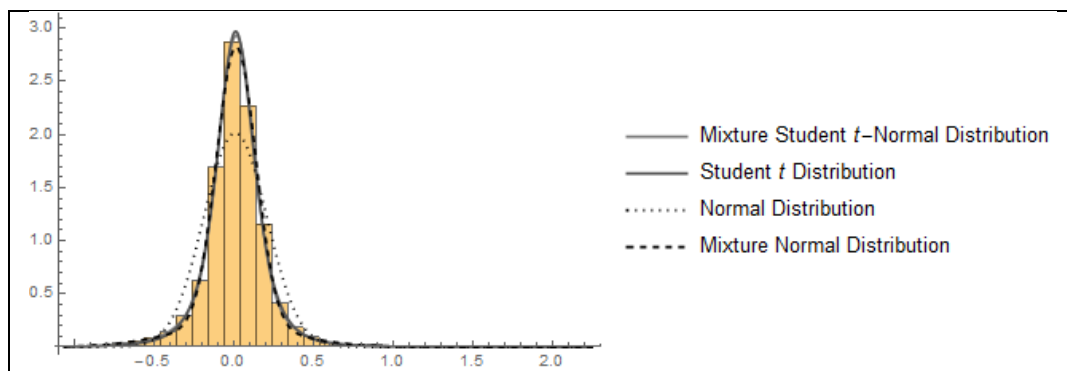
Source: Own work, data: <http://www.boerse-frankfurt.de>



Source: Own work, data: <http://www.boerse-frankfurt.de>

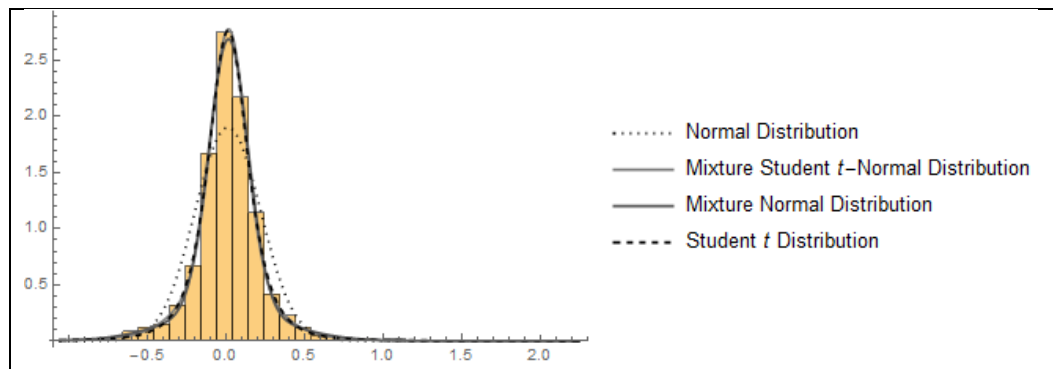
Figure 2 Distributions of the Markit iTraxx Europe index changes, Period A (19.07.2007-03.03.2015)

All estimates of the distribution parameters are based on maximum likelihood methods (MLE). Table 3 shows estimations of the Student t distribution parameters. We assume two types of mixture distribution – first mixture distribution has two normal components and second mixture distribution has Student t component and normal component. One component represents the stable downward trending regime and the second component represents the volatile regime where credit spreads have the tendency to jump up rapidly and jump down even more rapidly. Table 4 gives the estimated parameters of the normal mixture distribution and Student t -normal mixture parameters are given in Table 5. Figures 2, 3, and 4 show histograms of changes and distributions fitting for period A, B and C, respectively. It is evident, that our data do not follow normal distribution.



Source: Own work, data: <http://www.boerse-frankfurt.de>

Figure 3 Distributions of the Markit iTraxx Europe index changes, Period B: (24.10.2008-03.03.2015)



Source: Own work, data: <http://www.boerse-frankfurt.de>

Figure 4 Distributions of the Markit iTraxx Europe index changes, Period C: 07.05.2010-03.03.2015

VaR and ETL estimates are given in Table 6 and Table 7. We compare four cases – in the first case we have computed VaR/ETL using Student t , Normal distribution, Normal Mixture and Student t –Normal Mixture distribution. We have taken into account iid and autocorrelated variant of the VaR/ETL. The results are expressed as amounts from the portfolio value 100000 EUR. Student t VaR generates the highest estimations of the VaR. The effect of the negative autocorrelation causes decreasing of the VaR.

Table 6 99% 10 days VaR and ETL estimates for Markit iTraxx Europe index changes

	VaR Student t iid	VaR Student t autocorel.	ETL Student t iid	ETL Student t autocorel.	VaR Normal iid	VaR Normal autocorel.	ETL Normal iid	ETL Normal au- tocorel.
Period A	10356.80	10134.70	44485.60	43596.10	15813.5	15504.3	18117.0	17762.8
Period B	9936.34	9447.15	43067.6	41115.4	15420.8	14739.8	17667.2	16887.0
Period C	9109.26	8263.41	38614.6	35357.3	14571.0	13380.1	16693.6	15329.6

Source: Own work, data: <http://www.boerse-frankfurt.de>

Table 7 99% 10 days VaR and ETL estimates for Markit iTraxx Europe index changes

	VaR Normal mixt iid	VaR Normal mixt ac	ETL Normal mixt iid	ETL Normal mixt ac	VaR St-Normal mix, iid	VaR St-Normal mix ac	ETL St-Normal mix, iid	ETL St-Normal mix, ac
Period A	20693.2	20292.6	17252.6	17580.8	21138.1	20780.6	17522.2	17862.5
Period B	20316.5	19434.8	17069.9	17781.5	18350	17527.4	18514.8	19370.1
Period C	21094.3	19518.7	10091.2	10452.2	17403.9	15975.2	18290	19917.9

Source: Own work, data: <http://www.boerse-frankfurt.de>

Table 8 Historical 99% 10 days VaR for Markit iTraxx Europe index changes

	Historical VaR
Period A	19289.9
Period B	18973.7
Period C	18657.4

Source: Own work, data: <http://www.boerse-frankfurt.de>

3 Discussion

All of the analysis has been obtained using our program code written in Wolfram Mathematica software¹.

Data was divided into 3 analysed periods: 19.07.2007-3.03.2015, 24.10.2008-3.03.2015, 07.05.2010-3.03.2015. First analysed period does not reflect significant autocorrelation effect in the Markit iTraxx Europe index changes. Both crisis depressions caused significant negative autocorrelation effect.

¹ Good source of the programing tips in Wolfram Mathematica can be found in (Říhová *et al.*, 2015)

Our results confirmed that assumption of the normal distribution is rejected for all selected periods (see Cramér-von Mises p -values in Table 1). Student t , Student t – Normal Mixture and Normal Mixture distributions are presented in our data periods (see Cramér-von Mises p -values in tables 3, 4 and 5) or see figures 2, 3 and 4.

99% 10-days VaR/ETL obtained from our analysis is different under each data distribution. Comparing our estimations of the VaR with 99% 10-days historical VaR, we see that 99% 10-days Student t -Normal Mixture VaR is comparable with that. Moreover, 99% 10-days Student t -Normal VaR enables predicting new innovations in the Markit iTraxx Europe index changes. Because of that we recommend using estimation of 99% 10-days Student t -Normal VaR.

Due to negative autocorrelation estimation of VaR/ETL was a little lower as VaR/ETL when autocorrelation is zero. Negative autocorrelation causes that the adjusted horizon is lower as horizon h or $\tilde{h}$ – day standard deviation is smaller than h day standard deviation.

Our calculations have proved that ETL is usually greater than the corresponding VaR. Leptocurtic distribution with low values of the degree of freedom causes that ETL is far greater than the VaR. If degrees of freedom increase VaR and ETL converge toward to the normal VaR and ETL because of the Student's t distribution converges to the normal distributions.

Previous study was given in (Alexander, 2008). Alexander had analysed iTraxx Europe 5-year index time series data during period from June 2004 to April 2008. During this period the trend was decreasing until June 2007 followed by an increasing trend, data had significant positive autocorrelation effect. Our study has analysed period from July 2007 until March 2015 when the trend was increased without first autocorrelation effect. We have found 2 subperiods with negative autocorrelation effect. The begin of these periods correspond to problems related to depression.

Normal mixture distribution showed only 6.48% proportion of the volatile regime (Alexander, 2008) while our analysis showed 23.94% ratio of the volatile regime during whole analysed period for normal mixture distribution. In addition, we took into account Student t – normal mixture distribution, that showed that volatile regime during whole analysed period follows normal distribution with probability 0.1225 and Student t distribution with probability 0.8775. It means that depressions after year 2008 caused mainly heavy tailed distributions.

(Alexander, 2008) recommend to use autocorrelated normal mixture VaR. Our recommendation is to use autocorrelated Student t -normal VaR when crisis began but for whole period is sufficient to use Student t -normal VaR without autocorrelation effect.

Conclusion

Value-at-Risk (VaR) is a standard risk measure for measuring the market or credit risk that disregards any losses beyond the VaR level and therefore this may lead to problem with tail risk measurement. VaR may mislead investors. If the investor would like to know information about losses beyond the VaR, it is appropriate to use information about Expected tail loss (ETL). The problem can occur when the underlying distribution is fat-tailed. Then the estimation errors of ETL can be much greater than those we get from estimation of VaR. (Yamai, Yoshiba, 2005) recommend to increase the sample size and to use simulation methods or not to use only single risk measure in risk management, but to use both – VaR and ETL together.

Our study illustrated the application of different parametric linear model approaches to estimating the VaR and ETL for an exposure 100000 EUR to the Markit iTraxx Europe index. We have concluded that the historical data are highly non normal, with positive skewness and extremely high positive excess kurtosis. Significant negative autocorrelation was caused by an extreme depression. Therefore normal model VaR or ETL are inappropriate. Our empirical study shows that for better understanding of the risk it is needed to estimate VaR and ETL based on leptokurtic and/or skewed distributions.

Acknowledgment

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Indebtedness of Local Government Authorities in the Czech Republic

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Abstract

Purpose of the article. One of the first reforms after 1990 was the reform of public administration: that year municipalities were established as the basic element of local government, establishment of regions as higher territorial self-governing units took place after 2000. Municipalities and regions are public corporations, they have their own assets and manage them individually according to their annually approved budgets. The tax jurisdiction of municipalities and regions is not too vast. Indebtedness of municipalities and regions in the Czech Republic has not been systematically analysed.

Methodology. Given the nature of the researched area, only secondary data from official statistics can be used. Data on indebtedness of municipalities and regions are taken from the Ministry of Finance of the Czech Republic, other data from statistical yearbooks of the Czech Statistical Office. These secondary data were processed using standard methods of descriptive statistics and correlation analysis.

Scientific aim. The aim of the present paper is to summarize the development of indebtedness of municipalities and regions and also to research whether any dependence between the indebtedness and selected factors (population, number of municipalities, transfers and established allowance organizations) - can be considered.

Findings. The largest part of the total debt of municipalities consists of debts of the four largest cities (Prague, Brno, Ostrava and Plzeň). Of the regions, the Central Bohemian and Olomouc Regions have the highest debts in absolute terms, and the Karlovy Vary and Olomouc Regions when converted per capita. Of interest is the indication of the connection between the debt of regions with their populations and the number of established allowance organisations: the values of the calculated correlation coefficients in these cases suggest a moderate direct linear dependence.

Conclusion. We can conclude that development of indebtedness of municipalities and regions in the Czech Republic is generally prudent and stable, however, some municipalities fulfil their obligations only with great difficulties.

Keywords: indebtedness, local budgets, local government, municipalities, regions

JEL Classification: H72, H74

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Introduction

One of the first major reforms prepared and gradually implemented right after 1990 was also the reform of public administration. Nevertheless, a rather long and complicated path led to the current organisation of public administration: while municipalities as the basic units of local government were constituted already in 1990, it was not decided on the form and hierarchy of higher territorial self-governing units for several years after that and the idea about their arrangement crystallized only gradually (Průcha, 2011). It was not before the Constitutional Act no. 347/1997 Coll., on the establishment of higher territorial self-governing units and amending Constitutional Act no. 1/1993 Coll., that established (with effect from 1 January 2000) 14 regions (including the Capital City of Prague), whose territory was exhaustively defined by the territories of the listed districts. The actual establishment of regions and the gradual commencement of their activities is, however, associated with the adoption of Act no. 129/2000 Coll., on regions (regional government), and with the first elections to regional councils, which took place on 12 November 2000.

After the termination of activities of district offices (as of 31 December 2002), municipalities began to fall into three differentiated categories for the purposes of exercising the so-called delegated powers: "ordinary" municipalities, municipalities with an authorised office, municipalities with extended powers. I.e. the originally three-tier system of public administration (municipality - district - region), which was, however, considered temporary from its beginning, was eventually replaced by a more differentiated system. The effectiveness of this action is at least doubtful, however, after more than a decade of experience and gradual adjustments of powers and minor adjustments of territories belonging to individual regions, we can talk at least about the fact that at the moment the system is already stabilised.

1 Status, Powers and Management of Municipalities and Regions

In accordance with the Constitution, municipalities are considered the basic territorial self-governing units, each municipality is always part of a higher territorial self-governing unit: region. At the same time, the mode of the powers and competency of municipalities and regions is very similar (it is based on a so-called mixed model) allowing the interrelationship of their activities. The status and tasks of municipalities and their bodies are governed by Act no. 128/2000 Coll., on municipalities (municipal government), regions, and their bodies by Act no. 129/2000 Coll., on regions (regional government), all as amended. In addition to the above acts, the basic framework of the management of municipalities and regions is defined also by Act no. 250/2000 Coll., on budgeting rules of territorial budgets, as amended.

Municipalities and regions are considered public corporations that have their own property and their own incomes, and operate under conditions stipulated by law according to their own budgets. Municipalities and regions act in legal relations on their own behalf and bear responsibility arising from these relations.

Municipalities and regions manage their affairs independently, state authorities can interfere with self-government only in the manner set out by law. State administration, the performance of which was entrusted to municipal and regional authorities by law, is performed by their authorities as their so-called delegated powers.

Municipalities and regions are independently managed by their assembly, other bodies are the council, mayor of a municipality / governor (president) of a region, municipal / regional authority.

The financial management of municipalities and regions is governed by the relevant annual budget which is based on a budgetary outlook. The budget is usually compiled as balanced; it can be approved as a deficit budget only if this deficit can be paid from funds from previous years, a contractually secured loan or credit, the proceeds of bonds issued or repayable financial assistance (section 4 of Act no. 250/2000 Coll.). Budget income consists mainly of revenue from its own assets and property rights, share in shared taxes under Act no. 243/2000 Coll., on the budgetary allocation of taxes, subsidies from the state budget and state funds, income from the results of own operations and more. Municipalities and regions in the Czech Republic have very low tax powers: regions do not even have the typical entrusted tax such as property tax for municipalities, i.e. their income is highly dependent on transfers from the state budget (in the form of a share in shared taxes, as well as in the form of various subsidies). Expenditure of municipalities and regions help ensure the performance of state government, other activities entrusted to them, etc.

2 Overview of Related Literature and Sources

Related literature focusing on the debts of municipalities and regions is quite extensive and fairly differentiated. Publications can be generally divided by their main focus into three groups: a) publications focusing on the ratings of indebted entities, b) publications searching for limits of indebtedness of municipalities and regions, c) publications searching for and describing various factors that affect indebtedness. Here, a special subset consists of publications exploring the political business cycle at the local level. It also should be noted that many more publications focusing on the indebtedness of municipalities have been published than those that turn their attention to higher territorial self-governing units (regions). Various connections with fiscal federalism or fiscal decentralization are very often reflected in these texts.

Due to the contents of the submitted text, we focus on those sources that deal with factors that may affect indebtedness at lower levels of government.

The theory of public economy generally recommends to central governments as well as governments at lower levels (municipalities and higher territorial self-governing units) to finance ordinary expenditure from ordinary income (naturally, mainly tax income), capital expenditure from capital income (Gruber, 2011). Even loans or income from bonds issued can be included in them. I.e. indebtedness (whether in the form of a received loan as well as bond issue) is permitted only in connection with the acquisition of investments. Even Musgrave and Musgrave (1994, p. 513) recommend “financing of public investments from a loan that will be repaid over a longer period (when the loan is repaid along with the use of the investment) to ensure intergenerational equity”. A similar view, i.e. to use loans to finance local capital projects, is shared also by Holtz-Eakin (1991).

Based on a data analysis from 49 U.S. states on a time series 1961-1990, Kiewiet and Szakaty (1996) concluded that the level of indebtedness was influenced by two factors: the amount of personal income per capita and left-oriented government. The effect of various socio-economic factors (e.g. population, share of immigrants in the population, transfers and tax revenues, etc.) at the level of debt per capita is admitted even by Guillamón, Bastida and Benito (2011). On the other hand, they point out an interesting fact that weaker governments had lower levels of debt (analysed data came from 3,253 municipalities with population over 1,000 in Spain).

The same authors (2013) again proved on a sample of Spanish municipalities with population over 20,000 (time series 2001-2008) the influence of population on the level of spending, and at the same time they suggested that the spending of these municipalities always increased the year before local elections. In their opinion, this supports the assumption of the political business cycle at the local level in Spain. Veiga and Veiga (2007) consider the political business cycle for the conditions of the local level in Portugal demonstrable: they describe how municipal governments increase spending in the pre-election period. They also change the composition so that the spending is more visible to the voters, while local taxes tend to decrease one or two years before the elections (and the budget deficit grows). A clear trend towards higher deficits in countries, where shorter average duration of governments and large coalitions of many parties were reported, is noted by Roubini and Sachs (1989).

Even in the case of other authors, we encounter reference to the influence of population and income level per capita on the level of debt of local governments. For example, Rivers and Yates (1997) theoretically explain that population growth results in growth of requirements for the local public sector, and thus ultimately leads to higher debt.

3 Aim, Data Sources and Methodology

This text has two main aims: 1) to summarize the development of indebtedness of municipalities and regions in the Czech Republic and 2) to research whether any dependence between the indebtedness and selected factors (population, number of municipalities, transfers from the state budget and established allowance organizations) - can be considered. These factors were selected in accordance with research results published abroad (see above).

Given the nature of the researched area, only secondary data from official statistics can be used. Data on indebtedness of municipalities and regions are taken from the Ministry of Finance of the Czech Republic, other data from statistical yearbooks of the Czech Statistical Office. If the indebtedness of regions is examined, Prague is fully deliberately excluded from the investigated sample because it is a region as well as a city. These secondary data were processed using standard methods of descriptive statistics and correlation analysis.

4 Results and Discussion

4.1 Indebtedness of Regions

Let us start from the basic data on the development of indebtedness of regions in the period 2002-2013 (Table 1).

The development of indebtedness of regions in the years 2002-2013 was relatively moderate (e.g. compared to the rapid growth of the national debt in the same period). Especially in the first years of their existence and independent management, regions were very cautious and restrained in their management. Most regions did not begin to build significant debts until the period 2008-2010 when even transfers to regional budgets were overall lower due to the impact of recession and decline in national tax revenues, and at the same time projects commenced already before this period often had to be co-financed. Since debt financing of investments is, however, generally recommended: see e.g. Musgrave and Musgrave (1994), Stiglitz (2000) or Holtz-Eakin (1991), from this perspective, a slight indebtedness of regions (which is, however, supported by improvements of regional infrastructures) is quite a rational action.

Table 1 Development of total indebtedness of regions in the period 2002-2013 (billion CZK)

Region	2002	2005	2008	2011	2013
Central Bohemian Region	0	0	0.926	3.719	3.446
South Bohemian Region	0	0.041	0.637	0.297	1.217
Karlovy Vary Region	0.006	0.424	0.968	1.917	2.103
Plzeň Region	0	0.006	0	0	0.032
Ústí nad Labem Region	0	0.089	0.421	2.360	2.805
Liberec Region	0	0.285	1.107	0.779	1.158
Pardubice Region	0.014	0.766	2.172	2.308	1.884
Hradec Králové Region	0.001	0.282	1.057	1.225	1.014
Vysočina Region	0	0.050	0.708	1.034	1.103
South Moravian Region	0	0.430	2.397	2.163	2.971
Olomouc Region	0	0.080	1.781	3.289	4.349
Zlín Region	0.002	0.252	1.124	1.597	2.046
Moravian-Silesian Region	0.001	0.175	1.294	1.603	2.709
TOTAL	0.024	2.880	14.592	22.291	26.840

Source: Ministry of Finance of the Czech Republic, 2014

The above data show that the regions with the highest debts - in terms of the absolute amount of the debt - are the Central Bohemian and Olomouc Regions. However, we will get a different perspective if we convert the amount of the debt per capita of the region (Table 2).

Table 2 Development of debt per capita in the period 2003-2013 (CZK per capita)

Region	2003	2005	2008	2011	2013
Central Bohemian Region	68.94	0	761.03	2921.23	2658.78
South Bohemian Region	88.01	65.45	1003.76	467.05	1912.19
Karlovy Vary Region	328.86	1392.05	3136.98	6315.91	6986.73
Plzeň Region	9.10	10.90	0	0	55.86
Ústí nad Labem Region	639.14	108.14	504.62	2848.19	3396.53
Liberec Region	229.46	665.47	2540.21	1778.00	2640.98
Pardubice Region	412.73	1515.17	4228.12	4470.62	3652.71
Hradec Králové Region	38.34	514.74	1909.62	2210.99	1836.78
Vysočina Region	92.74	98.04	1376.39	2019.64	2160.53
South Moravian Region	41.90	380.34	2095.99	1857.24	2542.41
Olomouc Region	97.45	125.20	2774.91	5148.33	6830.97
Zlín Region	16.88	426.80	1901.58	2708.63	3487.93
Moravian-Silesian Region	30.22	139.80	1035.06	1300.48	2213.37

Source: Ministry of Finance of the Czech Republic, Czech Statistical Office, own calculations

A great difference between individual regions is apparent from these data: the Plzeň Region is absolutely unique as it has been reporting the lowest debt per capita in the long term (as well as the total debt). The opposite extremes are the Olomouc and Karlovy Vary Regions where the debt per capita in 2013 was two to three times higher than in other regions. Interestingly, the Olomouc Region originally belonged to the regions where the total debt as well as the debt per capita was rather average and below average, while the Karlovy Vary Region has been reporting an above-average debt per capita compared to other regions from the beginning.

The crucial part of the indebtedness of regions is in the form of bank loans (Table 3), mainly from Česká spořitelna and Komerční banka. Some regions also draw loans from the European Investment Bank. The regions have not issued

bonds yet. The provider of financial assistance is usually the State Transport Infrastructure Fund, in 2013 the Ministry of Finance provided two repayable financial assistance packages to the Karlovy Vary and Ústí nad Labem Regions in the total amount of CZK 905.5 million in connection with the payment of financial corrections assessed to ROP Northwest.

Table 3 Structure of indebtedness of regions in the period 2003-2013 (billion CZK)

	2003	2005	2008	2011	2013
Loans	0.2	1.8	11.9	19.6	23.5
Financial assistance and other	1.1	1.1	2.7	2.7	3.3
TOTAL	1.3	2.9	14.6	22.3	26.8

Source: Ministry of Finance of the Czech Republic

4.2 Correlation between the Indebtedness of Regions and Selected Variables

We measured the power of the dependence of the debt of regions and selected factors using the coefficient of correlation r_{xy} . The calculation was performed for the year 2013. The debt of the region was included in the calculation always as variable x and individual considered variables as variable y . The results are as follows:

- The calculated value of the coefficient of correlation between the debt of regions and the mean population is $r_{xy} = 0.542145795$;
- The value of the coefficient of correlation between the debt and population density of the region is $r_{xy} = 0.481584922$;
- The value of the coefficient of correlation between the debt and the number of municipalities in the region is $r_{xy} = 0.159078338$;
- The value of the coefficient of correlation between the debt and the number of allowance organisations established by the region is $r_{xy} = 0.582591677$;
- The calculated value of the coefficient of correlation between the debt and transfers from the state budget is $r_{xy} = 0.135800845$.

Based on the above results, we can conclude a moderate direct linear relationship between the debt of regions and the mean population and population density of the region. Although the result must be assessed very carefully, it would, nonetheless, confirm similar results from abroad (see above), where population is mentioned as one of the factors that affect the indebtedness of regions.

The results also suggest a moderate direct relationship between the debt and the number of established allowance organisations. The fact that the number (but certainly also the structure that we cannot take into account in the calculation) of allowance organisations may affect the debt of the founder (i.e. region) is not surprising (these organizations are co-financed by regional budget). Instead, rather surprising are the values of the coefficients of correlation between the debt of the region and the number of municipalities, and between the debt of the region and transfers from the state budget which indicate very little dependence, respectively rather independence (in opposite with some results abroad).

4.3 Indebtedness of Municipalities

Let us again begin first with the aggregate data on indebtedness of municipalities (Table 4).

Table 4 Indebtedness of municipalities in the Czech Republic in the period 1994-2013 (billion CZK)

	1994	1997	2000	2003	2006	2009	2013
Total indebtedness	14.3	34.4	41.0	70.4	80.9	80.6	92.2
Indebtedness without Prague, Brno, Plzeň, Ostrava	5.5	20.8	24.1	28.0	33.5	41.3	43.3

Source: Ministry of Finance of the Czech Republic

Based on the above data, we can conclude that indebtedness of municipalities has been growing slowly but constantly since the 1990s. Already in the first years (and especially the first years of the new municipality development plans) many municipalities started to accrue debts, mainly due to the building of local, until then very neglected, infrastructure - according to the data of the Ministry of Finance, already in 1994, 1,969 municipalities were in debt, i.e. 31.7% of the total number of municipalities in the Czech Republic, the debt per capita in indebted municipalities reached, however, only CZK 1.9 thousand. On the other hand, some municipalities had very ambitious plans for their development (often encouraged by local entrepreneurs and the overall atmosphere of the early 1990s) that was not, however, substantiated by a qualified reflection on economic efficiency and especially the financial demands of such projects. The ease of access to bank loans, together with a certain naivety and gullibility of councils, then caused major economic problems to some municipalities - in the 1990s, a well-known case was e.g. Rokytnice nad Jizerou which accrued such excessive debt that they eventually had to start selling their municipal property to repay at least the interest on the loans. These signals led the Ministry of Finance to tightening controls over the management of municipalities, but it was not always able to prevent other similar problems. An important change, which, however, was not effective until 2003, is the obligation of municipalities to have their operations for the previous year reviewed by an auditor or the regional authority. Despite the ongoing efforts to ensure monitoring and control over the management of municipalities, the Ministry of Finance does not have any actual influence on the decision-making of municipalities (or their councils, respectively) regarding debts. Nonetheless, most municipalities behave prudently and carefully consider any debts, i.e. it can be stated that municipal debts are basically sustainable (perhaps also because it is expressly stated in Act no. 128/2000 Coll., on municipalities, as amended, that the state is not liable for the obligations of municipalities, they can be taken over only contractually). However, there are exceptions - again, these are municipalities that poorly assessed their financial abilities to repay the debts in relation to the demands of the projects or their pure feasibility (e.g. municipalities of Bublava, Prameny, Pohled etc.).

It can be also implied from Table 4 that a large part of the total debt consists of debts of the four largest cities - Prague, Brno, Plzeň and Ostrava (in the monitored period, the share ranges generally from 40 to 60%).

The size of municipalities (population) has a significant impact on the indebtedness - while in the category of municipalities with population up to 100, only 20.3% of municipalities were in debt in 2013, in the category with population over 5,000 it was 97% of municipalities, and all cities with population over 50,000 were in debt. In 2013, the total number of indebted municipalities was 3,239 of the total number of 6,248 municipalities, which is more than half (51.8%).

An interesting perspective may be also the structure of the indebtedness of municipalities (Table 5).

Table 5 Structure of indebtedness of municipalities in the period 1994-2013 (billion CZK)

	1994	1997	2000	2003	2006	2009	2013
Loans	4.9	13.5	18.4	35.2	47.1	55.8	68.8
Municipal bonds	7.6	13.2	10.1	21.7	22.9	14.7	15.0
Received financial assistance	1.8	7.7	12.5	13.3	10.9	10.0	8.4

Source: Ministry of Finance of the Czech Republic

The decisive share in the total indebtedness of municipalities is represented again - as in the regions - by bank loans. Česká spořitelna, Komerční banka and Československá obchodní banka still have the leading positions in providing loans to municipalities. It may be of interest that the providers do not require collateral from the municipalities for about half of the loans. Where collateral is required, municipalities use mainly bills of exchange, their property or future revenues of the municipality. Prague and some statutory cities (e.g. Brno, Ústí nad Labem) currently also have loans from the European Investment Bank which are specifically designed to improve urban infrastructure. These loans are very favourable for the cities - they have low interest rates and very long maturities.

Funds from bank loans are intended for the reconstruction and construction of technical infrastructure (water distribution, waste water treatment plant, sewer, roads), for the pre-financing of projects co-financed from EU funds and the regeneration and construction of housing. Municipalities also use these funds for reconstructions, insulation and expansions of educational facilities, sports complexes and other amenities.

Municipal bonds have been issued only by the largest cities - Prague, Brno, Ostrava, Liberec and others. Financial assistance has been received by municipalities mainly from state funds (e.g. State Environmental Fund, State Housing Development Fund), to a small extent also from other departmental authorities.

Conclusion

One of the first reforms after 1990 was the reform of public administration: that year municipalities were established as the basic element of local government, establishment of regions as higher territorial self-governing units took place after 2000 (after the adoption of Act No. 129/2000 Coll., and elections to regional councils). Municipalities and regions are public corporations, have their own assets and manage themselves individually according to their annually approved budgets.

Based on the analysis of official data from the Ministry of Finance on the indebtedness of regions and municipalities in the Czech Republic, we can conclude that the management of territorial self-governing units (regions and municipalities) is generally prudent and stable.

Of the regions, the Central Bohemian and Olomouc Regions have the highest debts in absolute terms, and the Karlovy Vary and Olomouc Regions when converted per capita. The larger part of the debt of regions is in bank loans.

Of interest is the indication of the connection between the debt of regions with their populations (the mean population and population density). The values of the calculated coefficients of correlation in these cases (0.542145795, respectively 0.481584922) suggest a moderate direct linear dependence. We must evaluate these results carefully but research results published abroad mentioned population as one of the main factors that affects the indebtedness of regions (see above), so our findings are consistent with them.

The results also suggest a moderate direct dependence between the debt of regions and the number of established allowance organisations. The fact that the number of allowance organisations may affect the debt of the founder is not surprising: these organizations are co-financed by regional budget.

On the other hand the values of the coefficients of correlation between the debt of regions and the number of municipalities, and between the debt and transfers from the state budget indicate rather independence (in opposite with some results abroad).

The largest part of the total debt of municipalities consists of debts of the four largest cities (Prague, Brno, Ostrava and Plzeň). Municipalities like regions have the largest part of their debt in bank loans, a smaller part also in issued municipal bonds (however, this applies only to a few large cities). The management of municipalities is under the monitoring of the Ministry of Finance, however, some municipalities fulfil their obligations only with great difficulties.

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Changes of strategic performance measures in the annual reports of stock-listed Austrian companies

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Abstract

Purpose of the article The increasing emphasis on economics leads to a high performance orientation in our society. Today it is widely accepted that companies have to measure their performance. Most of the time, this is done by financial measures only. An organization has to focus on financial measures and financial performance as long as it intends to exist in the future. Thus, the companies have to accomplish performance measurement. The long lasting existence of an organization should be in the interest of all stakeholder groups. Therefore, the value-based approach was developed to maximize economic success based on the shareholder value approach. Non-financial data are also necessary to make more reliable statements about the market, customers, processes and employees.

Methodology/methods Therefore, it is suggested to conduct a comprehensive qualitative analysis of the statements as traditional statement analyses concentrating on financial measures are not satisfactory. Especially annual reports show a great potential for this kind of analysis. Through the analysis of the annual reports of 20 stock-listed Austrian companies, this study should give insights which kinds of strategic performance measures have found their way into traditional financial disclosure of these organizations and how they change over a period of 10 years.

Scientific aim This article mainly focuses on the change of non-financial measures over a period of 10 years. We will try to explain this changes based on societal developments.

Findings The results reveal that there was a tremendous increase of non-financial measure disclosure during the years of 2002 and 2012. When having a closer look into the categories one can see that the increase solely arose from the augmented disclosure activities of diversity issues.

Conclusions If we take this development serious and regard the huge increase in diversity issues not only as political correctness, we have to confess that this will lead directly to a loss of competitive advantages.

Keywords: annual reports, non-financial data, organizational performance, performance measurement, strategy

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Introduction

Niven (2005) states that many organizations fail to implement their strategies successfully because of concentrating solely on financial targets and disregarding the drivers for strategy implementation. Mankins and Steele (2005) show that organizations can only translate 63 % of their strategy into performance while the other 37 % represent a performance loss due to for example poorly communicated strategy or insufficient performance monitoring.

However, according to Atkinson et al. (1997) little documentation about the nature and scope of an integrated model of strategic performance measurement (SPM) can be found in the literature. Moreover, Webb (2004) states that further research has to focus on a better understanding of the consequences of the SPM approach.

Concerning the disclosure of SPM Kaplan and Norton (1996) raise the question if the Balanced Scorecard (BSC) should be communicated outside the organization to external shareholders. The researchers state that the organization and their senior managers can communicate the measures without delivering sensitive data. The more used the senior managers get to the BSC the better they can supervise the strategic performance and predict financial performance for the future also for outside investors. Moreover, once the BSC is communicated the accountability and the commitment to the long-term strategy of the organization is strengthened.

Further, Eccles et al. (2001) provide an interesting approach for the disclosure of performance. According to the authors the reporting of the performance and the reporting of the organization's value is of great interest and relevance not only for the managers but also for analysts and investors. Managers who report the organization's performance on all measures that are also used internally can have tremendous benefits. The earnings expectations as well as performance dimensions for other stakeholders including expectations regarding environmental and social responsibilities can be satisfied. Moreover, Eccles et al. (2001) state that organizations can gain enormous competitive advantage from the disclosure of performance and value.

Additionally, the European Commission responded to the growing trend of social responsibility in the year 2001 and presented the green paper for 'Promoting a European framework for corporate social responsibility'. The Commission proposed that "all publicly-quoted companies with at least 500 staff are invited to publish a 'triple bottom line' in their annual reports to shareholders that measures their performance against economic, environmental and social criteria" (European Commission, 2001).

Also, the Financial Accounting Standards Board (FASB, 2001) supports the approach that companies can improve their business reporting by voluntary disclosure of management plans and strategies and specifying the measurements. Investors and shareholders have a great interest in more available information. The disclosure of critical success factors and the metrics used to manage the operations and strategies are very useful for voluntary disclosure. Moreover, the metrics should be explained and periodically disclosed according to the FASB (2001).

What is more, Vollmuth (2009) states that non-financial data are necessary to make more reliable statements about the market, customers, processes and employees. Therefore, it is suggested to conduct a comprehensive qualitative analysis of the statements as traditional statement analyses concentrating on financial measures are not satisfactory. Especially the notes and the statement of affairs show a great potential for the analysis.

As shown above there is an increasing interest about the organizational performance as well as an increasing demand of external reporting requirements by stakeholders, e.g. suppliers, investors, regulators. Therefore Neely (2005) suggests further research on the measurement of intangible and tangible assets for external disclosure and internal management. This directly leads us to the following research question:

How have strategic performance measures in the financial reporting of ATX listed companies changed over the last ten years?

1 Legal disclosure requirements for public companies

In respect to the empirical study it is important to know which legal disclosure requirements the companies have to follow. Therefore, the requirements on the annual statements, the statements of affairs and the notes are presented.

The annual statement provides different functions. The distribution of earnings as well as the tax assessment is based on the annual statement. Further, the annual statement provides an important information function for investors, creditors, employees and other stakeholders of the company's environment. It has to be mentioned that consolidated financial statements as well as annual statements based on international financial accounting standards (IFRS) have only an information function (Egger et al., 2010). The information function is realized by the legal norm requesting a truthful view of the company, the financial situation and the disclosure requirements (Egger et al., 2010).

In the Austrian Commercial Code (CC) the legal disclosure requirements are stated for incorporated enterprises comprising private limited companies as well as public companies (CC, § 221). Incorporated companies have to disclose the annual statement including the statement of affairs as well as the notes and if applicable the corporate governance report.

The disclosure has to take place within five months after the beginning of the business year and has to be presented to the members of the board of directors.

The annual statement shall provide a truthful view about the assets and liabilities, the profit or loss as well as the financial position of the corporation (CC, § 222). Regarding incorporated enterprises the law requests an extended annual statement including the balance of accounts, the profit and loss statement as well as the notes (Egger et al., 2010).

The notes should reveal the accounting and valuation principles of the balance of accounts and the profit and loss statement, explanation of liabilities, explanation regarding the balance of accounts and the profit and loss statement as well as other relevant positions (CC, §§ 236-242, §§ 265-266). The notes fulfil following functions: interpretation, explanation, correction, recovery and supplement function. Thus, it is a necessary tool for complementing the balance of accounts and the profit and loss account in order to grant a truthful view about the company (Egger et al., 2010).

The statement of affairs as supplement to the annual statement explains the course of business including the company results and the situation of the enterprise. It also describes which basic risks and uncertainties the company faces. Thus, a truthful view of the company should be provided. Further, the statement of affairs provides information about important events after the business year, the future development of the company, R&D activities, subsidiaries and the usage and risk management for financial instruments (CC, §§ 243-243a, § 267). The statement of affairs has also an information function but serves for the accountability of the annual statement as well. It has to be mentioned that statements of affairs are also used as an advertising instrument by the public companies (Egger et al., 2010).

Further, the statement of affairs has to follow four principles: completeness, reliability, clarity and comparability. Those principles should ensure the provision of the most useful information that the addressee might need (AFRAC, 2008). In order to describe the course of business including the business results and the situation of the company, financial and non-financial performance indicators are used. The Austrian Financial Reporting and Auditing Committee (AFRAC) states that financial performance indicators are the known business ratios regarding the performance and financial analysis. Large incorporated enterprises have to indicate the most important non-financial performance indicators and explain it regarding the amounts in the annual statement. Thus, the comparability and quality of forecasts is improved (AFRAC, 2008).

Non-financial performance indicators are not defined in the law. However, non-financial performance indicators are those measures which are important for the understanding of the course of business which can influence the business development beside the financial performance indicators. This includes for example ecological and social aspects as stated in the Commercial Code, § 243 (5), required to understand the course of business, business results and the situation of the business (AFRAC, 2008). The requirement to include environmental and employee issues in the statement of affairs was initiated by the modernisation directive of the European Union as stated in amendment of article 46. This amendment was implemented into Austrian Law in 2004 and is stated in the CC, § 243 and § 267 (IOEW, 2008).

AFRAC (2008) further provides a comment and gives non exhaustive examples of non-financial performance indicators. Regarding the workforce the committee named indicators like fluctuation, employee education, motivation, employee performance, organizational benefits, health and work safety, annual profit share and other benefits. Other indicators supporting the business activity are for example customer development, average turnover per customer, average turnover regarding the sales area, sold products per customer or product development, market share, production capacity or order situation. However, in the statement of affairs only those measures have to be disclosed which are essentially for the business activities (IOEW, 2008).

It has to be mentioned that the annual report is disclosed voluntarily by the companies and poses an important source of information for the stakeholders. Nevertheless, the disclosure of the annual statement, the statement of affairs and the notes is obligatory. However, usually the annual report contains some positive profiling of the company as well as the annual statements and the statements of affairs (IOEW, 2008).

The corporate governance report includes the corporate governance codex accepted in the country where the corresponding stock exchange is located and the public access possibilities for the codex. Moreover, the composition and the method of operation of the management board and the board of directors and its committees as well as the action taken for women support in the management board, board of directors and in managing positions are part of the corporate governance report (CC, § 243b). Public companies that meet the requirements for trading their shares at the regulated market according to the Stock Exchange Act, § 1 (2) have to disclose a corporate governance report (CC, § 243b). The Wiener Börse AG's markets comprising the official market and the second regulated market are regulated markets according to § 1 (2) Stock Exchange Act (Wiener Börse, 2013).

Additionally, large public companies have to submit the annual statement, statement of affairs and if required the corporate governance report to the court keeping the books of firms as well as to the Wiener Zeitung newspaper nine months at the latest after the closing date. Further, annual statements have to be transmitted electronically to the database of the commercial register (CC, § 277 (1), (2), (6)).

Listed companies have to follow the Transparency Directive as stated in the Stock Exchange Act § 82 (4). This implies different time limits and disclosure requirements. When the business year ends the annual financial report has to be published after four months at the latest and the public access has to be ensured for at least five years. The annual financial statement contains the audited annual statement, statement of affairs and explanation of the legal representatives that the annual statement and the statement of affairs provide a truthful view about the company (Egger et al., 2010). In addition, according to the Stock Exchange Act § 87 listed companies have to publish an interim financial report presenting the first six months of the business year two months at the latest after the reporting period and ensure the public access for at least five years (Egger et al., 2010). If the listed company does not provide quarterly reports according to IFRS it has to publish interim reports about the first and the third quarter of the year with a six week deadline after the reporting period (Egger et al., 2010).

2 Balanced Scorecard

One of the most popular strategic performance measurement instruments is the Balanced Scorecard (BSC). Kaplan and Norton's work was essential for the development of the BSC (Müller-Stewens & Lechner, 2011: 597).

According to Kaplan and Norton (1992) the BSC enables to get complex business information in a short and concentrate way. On the one hand it shows the financial measures of the past and on the other hand it shows operational measures which are responsible for future financial success. The operational measures include the customer satisfaction, the internal processes, and the innovation and improvement activities of the organization. Thus, the BSC comprises four perspectives and gives answers to the corresponding questions.

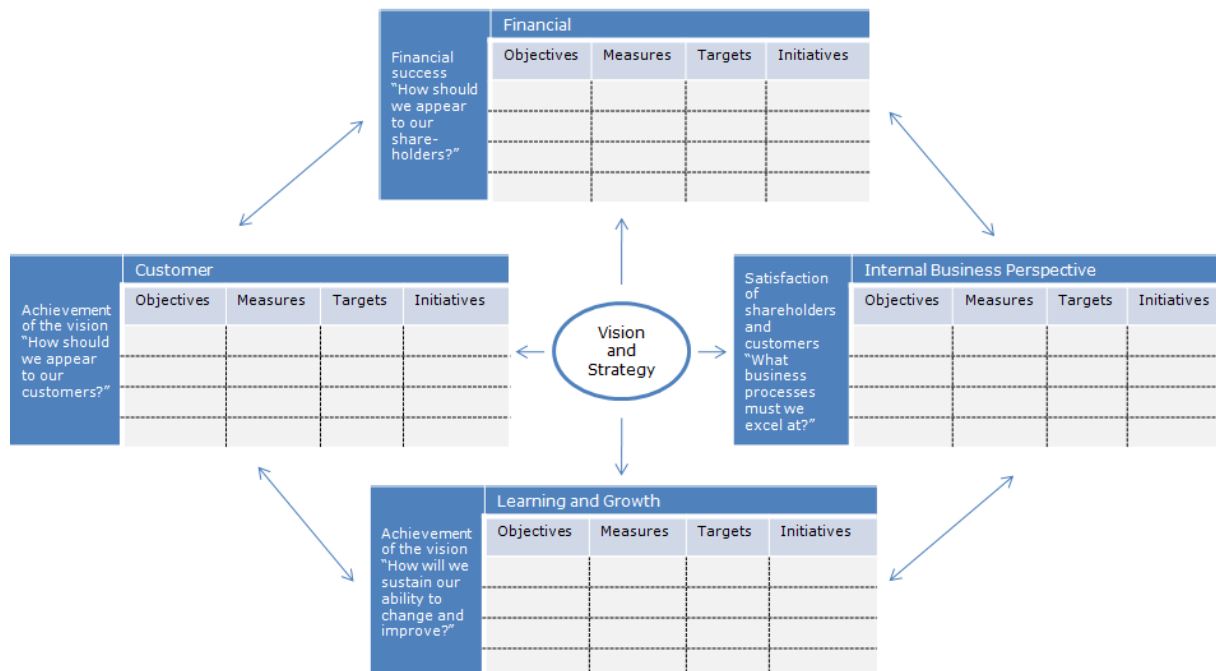
The first perspective is the financial perspective and questions how the organization looks to the shareholders. Second, the customer perspective refers to the question how the customer sees the organization. Third, the internal perspective deals with the question at what to excel. And the last perspective is the innovation and learning perspective asking if the organization can continue to improve and create value. Consequently, the BSC is an instrument which forces the managers to concentrate on the most critical measures (Kaplan & Norton, 1992).

Moreover, the BSC focuses on the organization's vision and not on control. Therefore, the measures should encourage the employees to reach the overall vision (Kaplan & Norton, 1992). Due to the implementation of the BSC the organization is able to connect the financial objectives with the strategic goals. The organization's budget supports the organization's strategy due to the integration of the strategic planning and the budgeting process into the scorecard (Kaplan & Norton, 1996). Additionally, the managers are forced to define and articulate their understanding of the agreed strategy. Very often people have a different understanding of one strategy. Consequently, the managers are urged to come to a consensus and translate the vision into measures that can be easily communicated to the people who are realizing the strategy (Kaplan & Norton, 1996).

Another advantage of the BSC is that it provides a framework for the strategy implementation. The BSC enables the strategy itself to react to the changes of the organization's environment like the competitive, market and technological environment (Kaplan & Norton, 1996).

The BSC further meets the developments of the business environment as cross-functional integration, customer-supplier partnerships, global scales, continuous improvement and team accountability. Thus, the BSC helps to understand interrelationships (Kaplan & Norton, 1992). In addition to that, the four perspectives support the productivity of the total capital. Thus, the ability to learn and to grow on the employees' side leads to a higher quality of the processes. The higher the process quality the more satisfied the customers are. Following this logic the first perspective, the financial one, can be met or even improved. However, the four perspectives can be adopted for the specific characteristics of each organization (Müller-Stewens & Lechner, 2011).

The following figure shows the BSC with its interrelationships between the four perspectives and the vision and strategy of the organization. Further, a description of the four perspectives is provided.



Source: based on Kaplan & Norton (1996)

Figure 1 BSC Translating Vision and Strategy: Four Perspectives

2.1 Customer perspective

Most of the companies focus heavily on customer satisfaction as it is inevitably for success. The customer perspective can be divided into 4 categories: time, quality, performance and service, and cost. The lead time for example can measure the order till delivery time for existing products or the time to market for new products. For the category quality the rate of defected products or the on-time delivery can be measured. The category performance and service measures the contribution to the value creation for the customers. Kaplan and Norton (1992) recommend to articulate goals for the categories (time, quality, performance and service) in the first place and then to translate the goals into measures. However, the organization has also to keep in mind the costs since not only the price counts as costs but also opportunity costs like wrong scheduling, defect materials, receiving and storing. If the organization charges a higher unit price but has an excellent scheduling, delivery service and quality, the company can be, nonetheless, a low cost supplier for the customer (Kaplan & Norton, 1992).

2.2 Internal business perspective

In order to satisfy the customer's expectations the organization has to improve, adapt or introduce measures, processes and actions internally. It is crucial for the organization to concentrate on the internal factors that help to satisfy the customer's needs. Thus, the factors which are most vital for customer's satisfaction have to be considered. Those are factors which could influence for example the cycle time, the quality, the employee skills or the productivity. Additionally, Kaplan and Norton (1992) recommend to identify the organization's core competencies and the critical technology that is necessary for ensuring the market position. Further, the organization has to decide in which competencies and processes it wants to be excellent at and define measures for it. Examples could be manufacturing excellence, low cycle time or new product introduction. However, an appropriate information system is crucial for the BSC as on the one hand it can identify the reason why a measure might deviate from its target. On the other hand it could have severe consequences for the performance measurement if the information system measures incorrectly or not on time.

2.3 Innovation and learning perspective

As the business world as well as the organization's targets for success is constantly changing the organization has to improve and adapt its products and activities steadily. It is true that the customer perspective and the internal perspective identify the necessary parameters for the organization's success, however, the innovation and learning perspective is also directly linked to the organization's value. It is important that the organization is able to introduce new products, create value for customers and improve operational activities in order to enter new markets. Consequently, the organization should be able to increase revenues and margins, thus, the shareholder value is being increased.

One example for an innovation and improvement measure is the percentage of sales from new products. When this measure is decreasing it is the manager's task to find out the reason of underperforming, e.g. product design, product introduction. Also measures of improvement for cycle time or defect rate as well as improvements within a special time may be possible (Kaplan & Norton, 1992).

2.4 Financial perspective

The company's strategy, the implementation and the processing have to contribute to the financial outcome, also known as the bottom line. Most financial measures deal with profitability, growth and shareholder value. Those measures are very often cash flow, sales growth within a period, operating income by division, increased market share by segment and ROE (return on equity). The already mentioned weaknesses of financial measures are also true for the BSC as their backward-looking focus and the inability to depict current value-creating actions. Moreover, some criticism leads to the assumption that financial measures are not necessary as the right operational actions leads to financial success anyway. However, according to Kaplan and Norton (1992) a financial control system can improve the total quality management of the organization on the one hand. On the other hand as already stated improved operational performance does not necessarily lead to improved financial performance. When the organization is not able to capitalize on the operational performance it might have overlooked other important factors (e.g. shift in customer requirements) and the organization even has to rethink its basic assumption of its strategy and mission. Kaplan and Norton further state that also the best set of measures does not implicate a successful strategy. Very often the managers after achieving operational improvement do not set another round of actions. Therefore, organizations should specify how the operational improvements (quality, cycle time, new products) lead to higher market share, operating margins, turnover and to reduced expenses. The financial perspective provides the linkage between the BSC and the shareholder value management. This perspective can integrate the shareholder value metrics to the sub objectives of cost reduction, improved asset productivity and revenue growth (Kaplan & Norton, 2001).

The researchers in addition, present the Swedish company Skandia as an example for BSC implementation. The company offers financial and insurance services and published as supplement to its annual report a so called 'business navigator' where the strategy and the strategic measures for the company's performance are communicated (Kaplan & Norton, 1996).

It is true that the BSC does not represent the interest of all stakeholders, especially the missing view on the competitors (Neely et al., 1995; Kanji, 2002; Striteska & Spickova, 2012) as well as a rather top-down performance measurement leads to criticism (Kanji, 2002). However, the BSC is widely accepted due to the adaptable design and the format which is appropriate for reporting (Gladen, 2001). It also enables the organization to get a holistic view and to achieve outstanding performance with related and not isolated measures (Kanji, 2002).

In the following empirical study, only the three non-financial categories of the BSC – namely "customer perspective", "internal business perspective" and "innovation and learning perspective" will be taken into account. The reason for this is lying in the mandatory aspect of financial disclosure of annual statements. Therefore the financial perspective shows no room for stakeholder communication – which is assumed as the most important factor of change in this study.

3 Empirical study

Annual reports can be classified as documents as explained in the following and therefore, the document analysis can be applied. Documents in general have the advantage due to their written format to gain a wider reach as they are independent from location and time (Wolff, 2012).

The reader of a report is regarded as an insider and therefore, certain knowledge about procedures and terminology can be assumed (Wolff, 2012). However, descriptions are not able to capture its subject in a complete way (Wolff, 2012). A text normally gives the reader room for interpretation. On the one hand complete interpretation of the text by the reader (reader-response theory) should be avoided. On the other hand the text should not give too many instructions as then the reader would not be able to make interpretations at all. Therefore, the author of a text tries to balance the two extremes (Wolff, 2012). The reader of an annual report, nevertheless, should be aware of the intended room of interpretation by the author. Wolff (2012) recommends to consider also formalities of the documents like layout, color, categories or sequences. The underlying analysis of the annual reports follows this recommendation as the section where the measures can be found is documented and provided with a code.

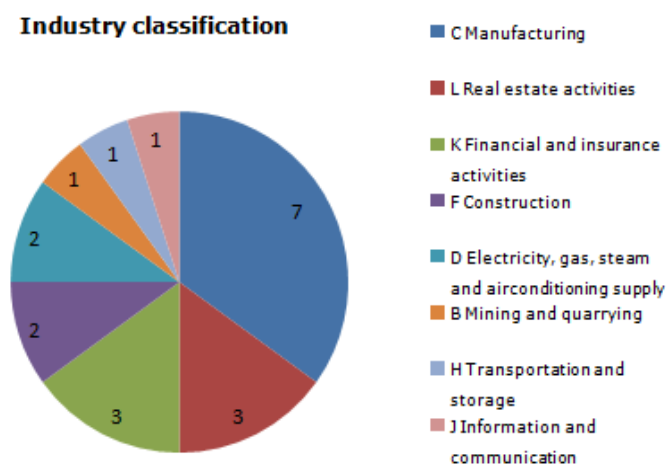
One advantage of the content analysis is that it allows the accomplishment of longitudinal studies. Thus, the content analysis enables to analyze data which are available in a periodical form as for example annual reports. What is more, with this form of analysis it is possible to execute the research question on a collective level like an organization. Another positive aspect is that due to the analysis of already existing data the question bias is rather small. Therefore the content analysis is less intrusive (Baumgarth & Eisend, 2009).

3.1 Sample

The sample consists of all companies listed on the ATX. No differentiation has been made during the selection process as the number of ATX companies is limited to 20 all companies are included in the research sample. For the analysis two time frames have been chosen. The first sample contains the annual reports of the ATX companies from the observation time of the year 2002 and the second sample includes the annual reports of the ATX companies from the year 2012. Thus, the analysis should comprise 40 annual reports. The observation time 2002 and 2012 was chosen due to several reasons. Firstly, the study claims actuality and therefore, the latest annual reports available were chosen reviewing the business year 2012. Secondly, during this time considerable interest for this topic evolved. As mentioned already Eccles et al. (2001) for example proposed the disclosure of all performance measures. It is also referred to the European Commission (2001) and to the Financial Accounting Standards Board (FASB, 2001). Thirdly, during a period of ten years changes might be observed as well as new trends might be evolved.

The material was generated by downloading the annual reports from the company's homepage and by receiving them per email or per post. For the business year 2012 all annual reports were available on the corresponding companies' homepages. Some reports from the year 2002 were also available on the homepages, however, most of them were requested per email. The companies then sent their annual reports from 2002 electronically per email. However, some reports are only available in form of a hard copy as in some cases the company was not listed yet in the year 2002. Two annual reports of the year 2002 were not available and another one is missing as the company was incorporated in the form as it exists now since the year 2007 and thus, could not offer a report. So the study was conducted on the basis of 17 annual reports from 2002 and 20 annual reports from 2012. After generating categories on the one hand from the BSC and on the other hand from the annual reports, a quantified set of measures was derived.

Figure 2 shows that 50 % of the sample size belongs to the manufacturing and to the real estate industry. The manufacturing industry counts 7 companies, the real estate and the financial and insurance industry are represented by three companies in each industry. Two companies are represented in each of the construction and electricity and gas industry. Each of the mining and quarrying, transportation and storage as well as information and communication industry contains one of the companies.



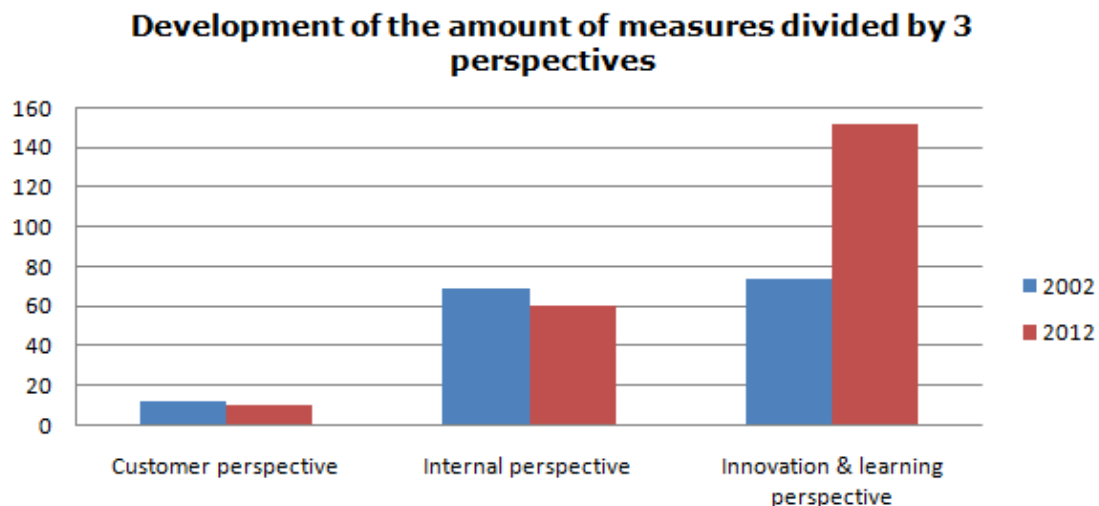
Source: Own work, 2013

Figure 2 Industry classification of ATX companies

4 Discussion

In the following the results of the annual report analysis will be presented. First of all, the amount of published non-financial measures increased by 44 % from 153 measures in the year 2002 to 221 measures in the year 2012.

The following figure shows the development of the measures within the non-financial BSC categories in comparison of the last 10 years. The innovation and learning perspective increased tremendously from 73 measures in 2002 to 151 measures in 2012. However, the internal perspective decreased by 12 % from 68 measures in the year 2002 to 60 measures in the year 2012. The customer perspective experienced as well a decrease of 17 % from 12 measures to 10 measures in the last 10 years. Thus, the previous reported increase of the overall non-financial measures is based on the immense increase of measures belonging to the innovation and learning perspective. However, it has to be mentioned as already stated above that the innovation and learning perspective contains by far the most predefined measures.



Source: Own work, 2013

Figure 3 Development of the amount of measures divided by 3 perspectives

Further, the top 10 measures of the year 2002 and of the year 2012 can be seen. In 2002 the measure 'growth' was clearly the most frequent published measure followed by 'employee training' and 'R&D'. The frequency of the reported measures was 24, 14 and 13. The measures 'market share' and 'employee accidents' depicts the end of the top 10 measures with 7 and 6 indications. However, it has to be mentioned that 'pile of orders' with 6 measures is ex aequo with the measure 'employee accidents'.

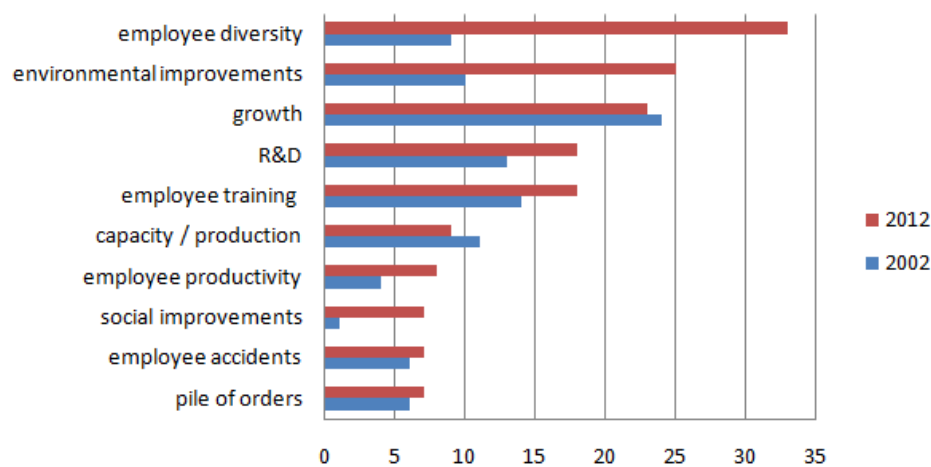
In the year 2012 the leading published measure was 'employee diversity' with 33 counts. It has to be mentioned that gender as well as diversity measures are subsumed under 'employee diversity'. Thus, if considered separately, diversity counts for 19 measures and gender for 14. However, in the year 2002 diversity counted for 7 and gender for 2 measures, totalling to 9 measures for 'employee diversity'. In the year 2012 'employee diversity' is followed by 'environmental improvements' with 25 reported measures. The measure 'growth' reached 23 indications followed by 'R&D' and 'employee training' with 18 measures each. The measures 'capacity / production' and 'employee productivity' reached 9 and 8 indications. The top 10 measures conclude with 'social improvement', 'employee accidents' and 'pile of orders' with 7 measures each.

The following graphic shows the most important measures in the year 2012 in comparison with its relevance 10 years before. The highest change of the growth rate regarding the percentage share can be seen at the measure 'social improvements' followed by 'employee diversity' and 'environmental improvements'. However, in real numbers the measure 'employee diversity' grew outstandingly by 24 measures and 'environmental improvements' by 15. This remarks the gaining of more and more importance of those two measures.

One can see that the top measure of the year 2002 is clearly over-ranked by the measures 'employee diversity' and 'environmental improvements' 10 years later. The other changes range between one and 6 measures. All measures increased despite of 'growth' and 'capacity / production' which decreased by one and two measures.

In the year 2002 the measure 'R&D' was behind 'employee training', however, in the year 2012 'R&D' became more important and displaced the measure 'employee training' ranging now right after the measure 'growth'. The measures 'employee productivity' and 'social improvements' did not reach the top 10 in the year 2002 but in the year 2012, signalling the growing importance of those measures. It has to be mentioned that 'pile of orders' was ex aequo with the last measure in 2002. On the other hand the measures 'operational effectiveness', 'additional value for customer' and 'market share' drop out from the top 10 list in the year 2012.

Top 10 measures of 2012 in comparison with 2002



Source: Own work, 2013

Figure 4 Most important measures 2002/2012

Conclusion

The results reveal that there was a tremendous increase of non-financial measure disclosure during the years of 2002 and 2012. When having a closer look into the categories one can see that the increase solely arose from the augmented disclosure activities of the innovation and learning perspective. Within this category the measures ‘employee diversity’, ‘environmental improvements’, ‘R&D’ and ‘employee training’ were the most reported non-financial measures. Those are the top 4 measures in 2012. Compared with the top measures of 2002 ‘growth’ was the leading indicator followed by ‘employee training’, ‘R&D’ and ‘capacity / production’. ‘Employee diversity’ ranged at the 6th place of the top 10 measures in the year 2002.

An explanation of the immense increase of the ‘employee diversity’ and ‘environmental improvements’ measures is that the modernisation principle of the EU of 2003 stated that if appropriate, non-financial measures have to be indicated in the statement of affairs including environmental and employee issues. This directive came into force in Austria in the year 2004. In the meantime as one can see from the analysis this directive is well established and most companies report on those issues, although, the legal definition is very vague. Thus, it could be assumed that due to the increased concentration on employee and environmental issues by the law the companies increasingly add more of those measures to their strategic performance measurement systems.

Nearly 20 years ago, Wallman (1995) proposed new areas of information disclosure and analysis, it seems that only due to the modernization directive those measures experienced increased attention. The author states in his commentary that due to the rapid changes in the business world the financial accounting and corporate disclosure miss some important developments. The author suggests the development of a dynamic and analytical framework considering strategy changes, the relationship between the organization and its stakeholders and financial tools. The author points out that a number of assets with increased importance (e.g. intellectual property or human assets) are insufficiently measured in terms of historical cost accounting, even though, more and more creditors are lending on soft assets.

However, at the same time the companies reduced their reporting activities on the internal perspective. A slight decrease can be observed regarding the customer perspective. This implicates that the companies got more cautious about what to publish especially regarding the internal perspective. If we take this development serious and regard the huge increase in diversity issues not only as political correctness, we have to confess that this will lead directly to a loss of competitive advantages. Therefore further studies are necessary to test these findings in accordance with internal change management projects.

Of course the underlying work also implies some limitations. First of all, some companies have not been listed at the Stock Exchange in the year 2002. This means either the annual report of 2002 was not available or the reporting behaviour changed because of the listing. This might have an influence on the amount of reported non-financial measures.

Regarding the development of the measures which is based on the structure of the BSC another allocation would have been possible, even though, the measures found in the analysis were allocated precisely and logically. Moreover, another theoretical SPM could have been the basis for the analysis, thus, different perspectives could have been chosen.

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Which factors drive the financial performance of construction companies: The evidence from the Czech Republic and Poland from 2009 to 2013

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Abstract

Purpose of the article The article deals with the identification of the quantitative factors that affect the performance of Czech and Polish construction companies, both in negative and positive way.

Methodology/methods The financial performance of a company was analysed in terms of return on equity (ROE). To identify the factors influencing ROE, the method of ROE decomposition was chosen. As the obtained results could be negatively influenced by the existence of outliers in the research sample, the winsorized mean method was used. The time period from 2009 till 2013 was analysed. Data were obtained from Amadeus database provided by Bureau Van Dijk.

Scientific aim The aim of the article is to identify indicators affecting the performance of enterprises in the construction section in the Czech Republic and Poland. Moreover, to answer following questions: Is the performance of Czech and Polish construction companies driven by the same factors? Is the relative influence of these factors the same or different between these countries?

Findings The results show that average performance of enterprises, measured in terms of ROE, was driven by a different set of factors in both countries. On the one hand the performance of Polish companies was mainly driven by the factors of the relative interest cost and return on assets, on the other hand the performance of Czech companies was mainly influenced by the factor of indebtedness.

Conclusions The research results identified the indicators affecting the performance of construction companies in the Czech Republic and Poland during the years 2009 - 2013, either in a positive or negative way.

Keywords: performance of enterprises, return on equity, decomposition of ROE, construction, comparison of the Czech Republic and Poland

JEL Classification: G32, O52

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Introduction

Szewczyk and Lobos (2012) made a comparison of companies in Poland and in the Czech Republic. According to their results, average sales of production companies differ. Polish production companies have higher revenues than the Czech companies.

Szewczyk and Lobos (2012) found that the ROA indicator is higher in the Czech companies not only in terms of the average, but also in terms of the median. They provide an explanation for it by saying that in the Czech Republic, there are more subsidiaries with a foreign parent company (Škoda, Siemens, Bosch, TČPA). For this reason, Czech companies are managed in a more modern style (they have set management controls, better technologies, and better cost control).

Sales and financial results are higher in production companies in Poland. The ROA indicator is better in Czech production companies due to their foreign ownership. In Poland there are a lot of companies that have problems with management. Overall, there is not a significant difference between Czech and Polish companies - if we view it using the TOP 100 methods (Szewczyk and Lobos 2012).

The CZSO (2014b) classifies construction work according to the construction work classification. Over the past years, changes in the structure are noticeable. Clearly visible is the decline of the proportion of the construction of buildings. During the housing boom, the proportion of the construction of buildings was - according to the Association of Building Entrepreneurs (2012) - up to 13% of the total construction work; in 2013, it declined to 7.8% (CZSO, 2014b). A similar situation can be observed in the category of roads and highways. In recent years, there has been a growing proportion of construction work in the construction of industrial and agricultural buildings. Due to the reduction of governmental spending, the area of transport constructions is threatened by the decline. Conversely, water management structures should maintain their values due to European funds. In the long-term, construction industry has good prospects; in terms of the labour market, the situation is more complicated. The number of workers in the sector could decline significantly (Boudoucnost profesí, 2015).

Intensive development of the construction of infrastructure in 2010-2012 was also due to the European Football Championship held in Poland in 2012. The construction industry market in past years dynamically grew. The main impetus for its development was the investments in road infrastructure and the construction of buildings intended for sporting purposes (the Ministry of Economy, 2014). In 2013, the drop of the value of construction production is anticipated in Poland. The drop will be mainly influenced by the sector of civil engineering, in which the construction of roads slowed down. The activity of buildings on railway construction sites was significantly lower (PR Embassy in Prague, 2014).

1 Methodology

Company performance can be evaluated by indicators of profitability. For this research, the Return on Assets (ROE) indicator was used. Basic indicators that influence the value of ROE will be also examined. For this, the Du Pont decomposition of the ROE indicator will be used (see, for example, Strnadová et al., 2013):

$$ROE = \frac{EAT}{E} = \frac{EAT}{EBT} * \frac{EBT}{EBIT} * \frac{EBIT}{A} * \frac{A}{E} \quad (1)$$

where:

- A total assets;
- E equity, i.e. the value of equity;
- EAT earnings after taxes, i.e. profit/loss for the accounting period;
- EBT earnings before taxes;
- EBIT earnings before interest and taxes.

The first factor of decomposition is the “tax burden” (TB), the second is the “interest burden” (IB), and the third is the return on assets (ROA), which can be decomposed (see below). The last one is the indicator of financial leverage (FL). The return on assets can be further broken down as follows:

$$ROA = \frac{EBIT}{A} = \frac{EBIT}{S} * \frac{S}{A} \quad (2)$$

where the S symbol represents sales. This decomposition shows that the ROA indicator is influenced by profit margin (PM) or asset turnover (AT).

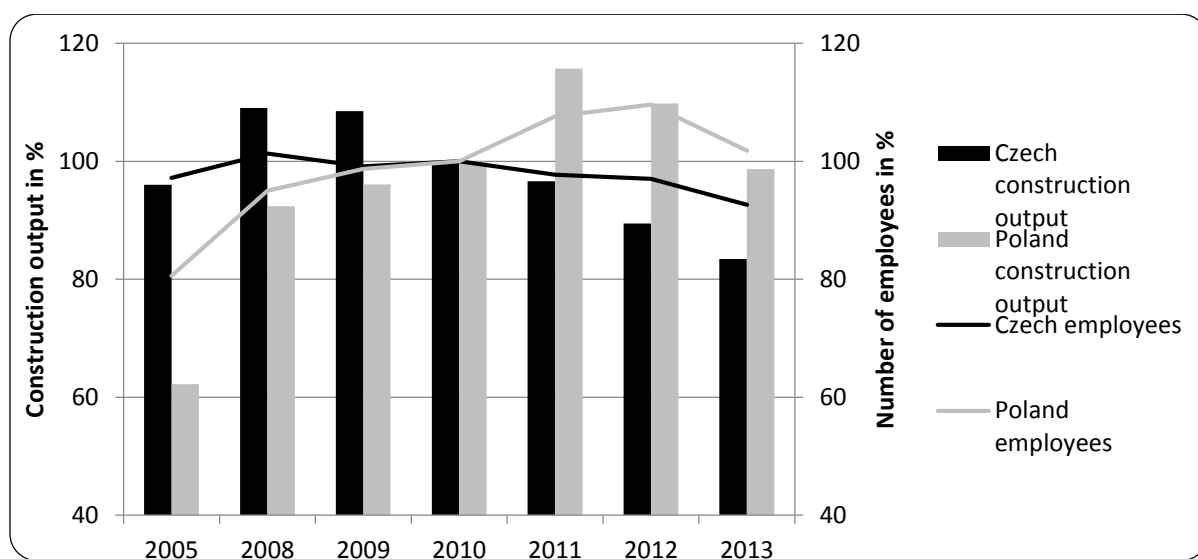
2 Research results

The sample surveyed includes 1000 construction companies (according to the NACE industry classification, sections 41, 42 and 43 are involved) in the Czech Republic and Poland in the period from 2009 to 2013. Data were obtained from the AMADEUS database provided by the company Bureau Van Dijk (2015). We will first focus on the comparison of trends in the development of construction industry in both countries, and then we will compare the performance of the companies in the construction industry.

2.1 Strategic analysis of the industry

The development of the construction production in Poland and in the Czech Republic will be compared in the framework of the strategic analysis of the construction industry. The comparison will be made on the basis of the total volume of the construction production, the number of employees working in the construction industry, the share of the construction industry in the creation of the GDP, and the volume of public contracts in the construction industry.

The annual development of the construction industry and the number of employees in this industry is shown in Figure 1 (the year 2010 represents 100%).



Source: CZSO, 2014a; CZSO 2014c; Eurostat 2014

Figure 1: Comparison of the construction output and the number of employees in construction

Since 2008, the CR experienced a drop in the construction production. In 2013, the value of the construction production declined by 25 percentage points (pp) compared to 2008, when the production reached the highest values. In absolute terms, the decrease was by 150 billion CZK (Kunc, 2014). Over the same period, the construction production in Poland increased by 6 pp, while in 2011, the increase represented 23 pp as opposed to 2008. A similar trend was experienced in the development of the number of employees in the construction industry, but the change is not as drastic as in the construction production indicator. An exception is the year 2012, when the number of employees slightly grew, but the construction production was already declining.

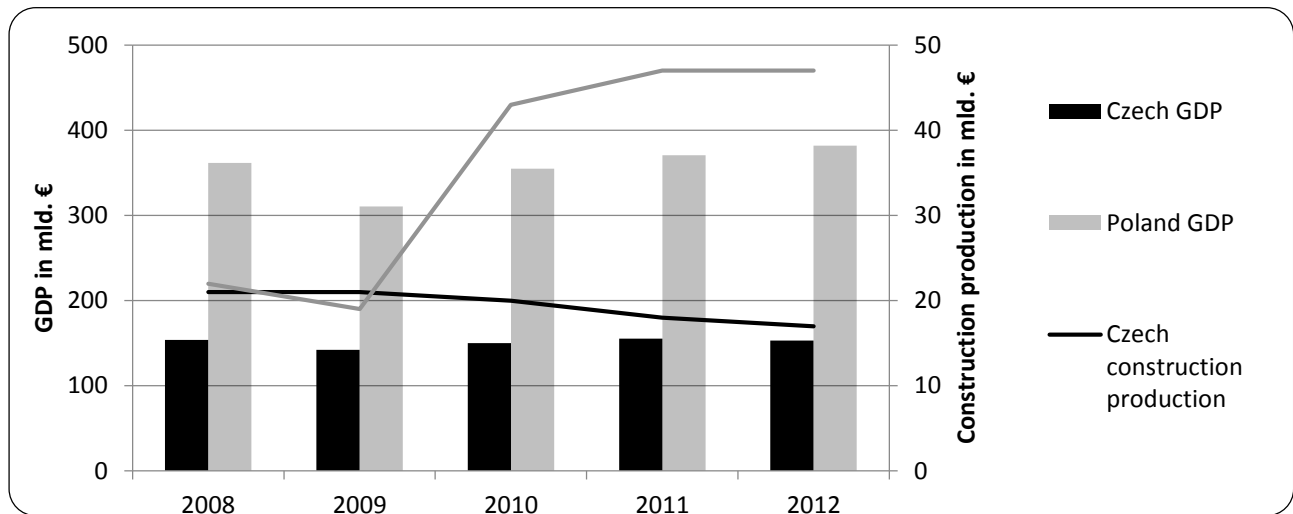
Table 1: Effectiveness of construction workers

	2005	2008	2009	2010	2011	2012	2013
Czech	0.99	1.08	1.09	1.00	0.99	0.92	0.90
Poland	0.77	0.97	0.97	1.00	1.08	1.00	0.97

Source: Author's own processing

By comparing both indicators, it is possible to determine the effectiveness of construction employees. Table 1 shows that the greatest work effectiveness was in the years with the high construction production, i.e. in 2009 in the CR, and in 2011 in Poland. Conversely, the lowest effectiveness was in the years when the production was lowest, i.e. in 2013 in the CR, and in 2005 in Poland. The decrease of the effectiveness resulted in higher total wage costs.

To identify potential causes of the different development of the construction production in the CR and in Poland, the GDP and the construction production will be compared - see Figure 2.



Source: Statista, 2015a; Statista 2015b

Figure 2: Comparison of GDP and construction production

It is hard to compare the absolute value of the GDP due to the differences in the size of the countries; it is only possible to compare the trend of the development. The GDP in the CR was almost the same for the whole period monitored. In Poland, the GDP values were changing significantly more: the initial drop of 51 billion € in 2009, i.e. of 14%, was almost balanced in 2010. For the monitored period, the value of the GDP of Poland grew by 21 billion €, i.e. by 6%.

As for the indicator of the construction production, the countries experienced a totally different development. In the CR, the construction production was declining; for the said 5 years it was by 4 billion €. The development in Poland was vastly different: for the monitored period, the volume of production increased by 25 billion €. This led to a doubling of the volume of construction production.

The share of the construction production in the GDP developed similarly - see Table 2. The share of the construction production in the GDP in the CR was 13.64%, in Poland only 6.08%. In the monitored period, the share of the construction production in the GDP in the CR declined by 2.53 pp, while in Poland it grew by 6.22 pp, i.e. more than twice as much. This caused that the share of the construction production in the GDP has been approximately balanced in recent years, more precisely - in Poland it is higher by 1.2 pp.

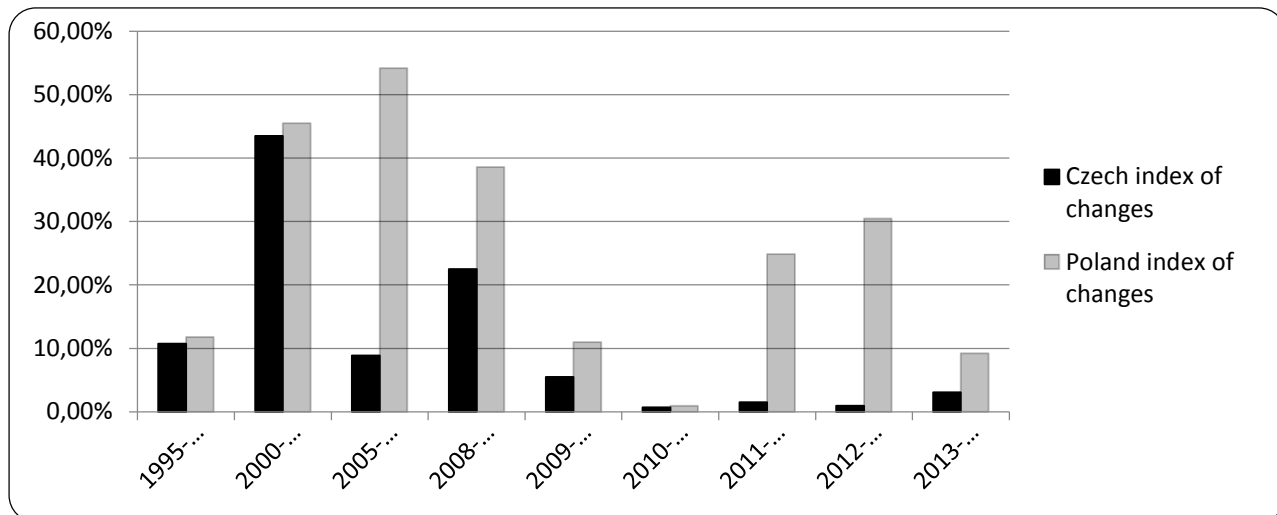
Table 2: Share of the construction production in the GDP

	2008	2009	2010	2011	2012
Czech	13.64%	14.78%	13.33%	11.58%	11.11%
Poland	6.08%	6.11%	12.12%	12.67%	12.30%

Source: Author's own processing

The question is - what caused the increase in the construction production and its share in the GDP in Poland - especially in the period when the economy of neighbouring countries stagnated. It can be inferred that the construction production is largely influenced by the demand of the state, i.e. by projects financed from the state budget. In 2008, measured by the value of the contracts, the volume of public contracts represented 38% of the total construction production; in 2013 it was 28%. This ten-percent drop entails a reduction of the value of public contracts by 97 billion CZK, which is 65% of the total decline in the construction industry in the CR.

Data for the entire public sector in Poland could not be traced, but its development can be deduced from the status of a highway network and the size of investments in rail networks. The development of changes of highways built since the early 90s of the last century until 2013 is shown in Figure 3.



Source: MPO, 2015

Figure 3: Index of the changed length of highway network in the CR and in Poland for years 1995 - 2013

In the early 90s, the CR had a highway network longer than Poland by 106 km (highways in Slovakia were deducted). This situation still persisted in 2005, when in the CR the highway network was still 12 km longer than in Poland. From 2000 to 2005, the development of the construction of the network became different. In the CR, only 46 km of highways were built in 2000-2005, while in Poland 194 km of new highways were built. Another significant difference in the pace of the highway construction occurred after 2010. In the CR, 41 km of highways were put into operation, which represented the increase of the highway network by 5.6%. In the same period in Poland, they built 668 km with an increase of the network of 78%. The same trend is evident also from the comparison of the volume of investments in the rail network. In the CR, annual investments in the rail network in the period from 2008 to 2013 ranged from 12.7 to 14.4 billion CZK. In Poland, the volume of investments for the same period increased from an initial value of 24.3 billion CZK to 69.9 billion CZK per year.

From the above differences we can deduce the main reasons for the different development of the construction production in the CR and in Poland:

- The decline of the investments in the infrastructure because of the reduction of expenses from the state budget.
- The European Football Championship held in Poland in 2012. This event spurred necessary investments in infrastructure and sports facilities.
- Building high-speed railway lines in Poland.

2.2 Analysis of the performance of companies operating in the construction industry

As already mentioned, the subject of the analysis is 1000 companies operating in the construction industry of both countries. The performance of the companies is measured by the ROE indicator, which is divided into four sub-indicators. Calculation results are shown in Table 3 and Table 4.

To increase the testifying ability of the calculated indicators, it was necessary to cope with outliers. The influence of outliers on the calculated indicators can be documented on the value of the ROE indicator in both countries in 2011. In that year, the standard deviation for Polish companies was 25.1787; for companies operating in the CR, 8.5404. The average value of the return on equity in that year was 86.08% for Poland and 49.09% for the CR. The interval of the values of the ROE indicator is {-69.64%, 736%} in the CR and {-14.30%, 245.16%} in Poland. For the analysis, the Winsorized mean was used (see, for example, Meloun and Militký, 2004):

$$\bar{x}_w(\vartheta) = \frac{1}{n} \left[(M+1)(x_{(M+1)} + x_{(n-M)}) + \sum_{i=M+2}^{n-M-1} x_{(i)} \right] \quad (3)$$

M int ($\vartheta n/100$);

ϑ percentage of left out outliers;

$x(i)$ i-th order statistics;

n number of elements in the selection.

In this research, 5% of indicators from the analyzed set were left out. The average value of ROE in 2011 is then 13.91% in Poland and 15.24% in the CR.

Table 3: Statistic characteristics of indicators in the CR

	average	median	Wincor. mean	standard deviation	max. value	min. value
ROE 13	0.0641	0.0691	0.1171	2.0553	6.4134	-48.7290
ROE 12	0.1155	0.0691	0.1126	1.6330	31.9858	-17.4263
ROE 11	0.4909	0.0950	0.1524	8.5404	245.1556	-14.2952
ROE 10	0.2110	0.1211	0.1771	1.1549	24.6190	-15.9349
ROE 09	0.2263	0.1501	0.2048	1.1556	21.9377	-20.4312
TB 13	0.8237	0.8088	0.8261	0.6644	6.2254	-11.7375
TB 12	0.7619	0.8090	0.8180	1.2692	5.2353	-34.0000
TB 11	0.7482	0.7482	0.8148	1.5064	5.2692	-39.8333
TB 10	0.5520	0.8067	0.8180	7.3735	4.9339	0.5520
TB 09	0.8756	0.7973	0.8144	1.9108	53.7609	-10.3333
IB 13	0.9567	0.9351	0.8436	13.0265	-204.7143	5.0000
IB 12	-2.0456	0.9305	0.8818	87.1368	55.1455	-2560.4615
IB 11	1.7603	0.9280	0.8700	17.1850	361.6266	-122.3434
IB 10	1.1582	0.9279	0.8663	5.8339	145.3158	-18.6944
IB 09	2.4163	0.9330	0.8825	43.2083	1276.2329	-4.6909
FL 13	4.1790	2.1870	2.9511	19.8882	300.3765	-207.9279
FL 12	-8.8583	2.2208	3.3283	306.0104	186.9482	-8878.9984
FL 11	-33.3884	2.2634	3.4488	765.0903	546.7629	-17035.8222
FL 10	5.0474	2.2869	3.3689	41.6177	686.6486	-479.2057
FL 09	2.3440	2.2676	3.3437	64.6182	390.1327	-1751.0625
ROA 13	0.0549	0.0387	0.0546	0.1190	0.7219	-0.7678
ROA 12	0.0472	0.0396	0.0528	0.1945	0.9255	-3.8722
ROA 11	0.0718	0.0471	0.0662	0.1522	2.3704	-0.8845
ROA 10	0.0826	0.0573	0.0799	0.1309	0.9758	-0.7794
ROA 09	0.0974	0.0716	0.0954	0.1348	1.0137	-0.7621
PM 13	4.8112	0.0277	0.0380	95.2143	2297.5000	-0.7898
PM 12	10.1413	0.0259	0.0355	296.4005	8666.5000	-459.4063
PM 11	-1.0970	0.0317	0.0439	29.7713	448.3182	-485.0000
PM 10	-4.0000	0.0369	0.0472	110.4733	1252.2000	-2549.6250
PM 09	0.5639	0.0448	0.0580	14.4666	273.0000	-160.5714
AT 13	1.7450	1.5516	1.6327	1.5434	26.6662	0.0000
AT 12	2.0042	1.5921	1.7142	3.7721	89.0707	0.0001
AT 11	1.8441	1.5689	1.6854	1.9874	33.2910	0.0000
AT 10	1.9024	1.6704	1.7837	1.8276	41.0325	0.0000
AT 09	1.9774	1.8490	1.9153	1.1485	11.1937	0.0000

Source: Author's own calculation based on the AMADEUS database

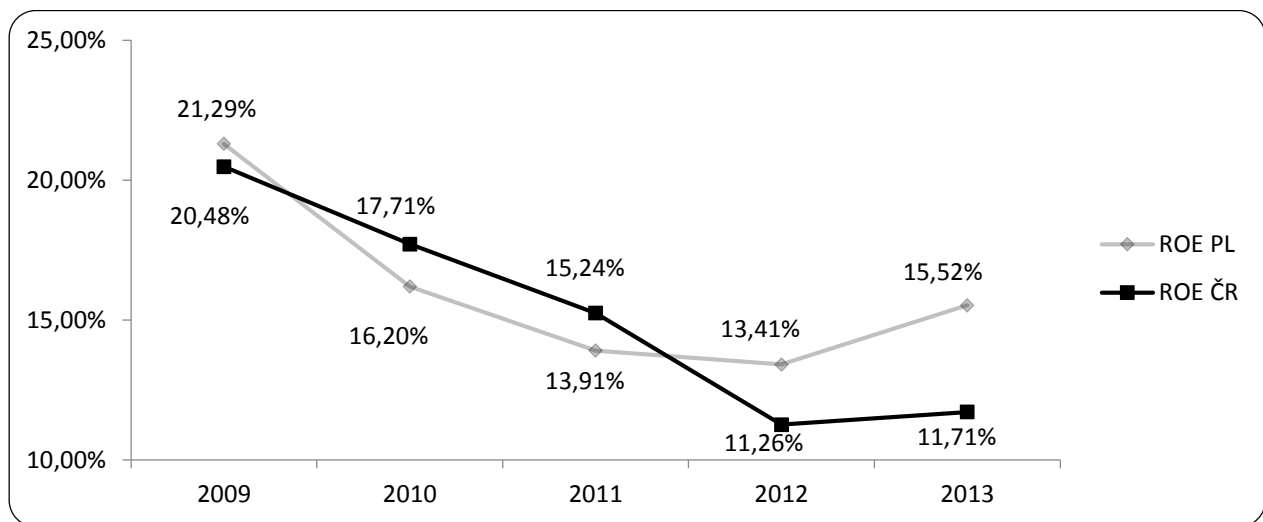
Table 4: Statistic characteristics of indicators in Poland

	average	median	Wincor. mean	standard de- viation	max. value	min. value
ROE 13	0.1961	0.1038	0.1552	0.9931	17.2836	-2.7659
ROE 12	0.1646	0.0856	0.1341	2.3938	47.3333	-21.9813
ROE 11	0.8608	0.1056	0.1391	25.1787	736.0000	-69.6364
ROE 10	0.2083	0.1261	0.1620	4.2841	108.5686	-58.3294
ROE 09	0.1194	0.1793	0.2129	1.1335	3.7838	-17.3924
TB 13	0.8020	0.7992	0.7987	0.2952	2.5775	-0.9133
TB 12	0.4397	0.8006	0.8002	9.3616	25.4091	-245.3704
TB 11	0.7638	0.7638	0.7982	1.4191	20.6652	-21.9524
TB 10	0.8091	0.7996	0.8038	1.4744	16.3333	0.8091
TB 09	0.6104	0.8025	0.7909	5.3434	5.6071	-149.0000
IB 13	0.9801	0.9716	0.9136	1.9489	-8.9780	5.0000
IB 12	0.2555	0.9434	0.8725	19.5324	126.0802	-504.6667
IB 11	0.7301	0.9512	0.9089	5.3337	27.0000	-133.1382
IB 10	0.8365	0.9476	0.9227	3.2059	31.5876	-75.2105
IB 09	0.1679	0.9596	0.8903	10.1327	41.1250	-190.4783
FL 13	4.1780	2.3633	3.1678	10.2592	117.1948	-27.1053
FL 12	14.5004	2.4064	3.2830	287.1493	7975.6667	-182.5481
FL 11	34.0572	2.5482	3.4553	810.4950	23829.0000	-701.5714
FL 10	4.7000	2.3918	3.0822	42.0029	1107.9412	-262.3529
FL 09	2.8585	2.2888	2.9251	19.3469	243.4157	-301.8116
ROA 13	0.1096	0.0499	0.0571	1.0984	21.2491	-0.7064
ROA 12	0.1387	0.0451	0.0471	3.1417	87.0789	-5.1315
ROA 11	0.0500	0.0499	0.0535	0.1683	1.4265	-1.2657
ROA 10	0.0668	0.0613	0.0720	0.1600	0.9379	-1.8801
ROA 09	0.1075	0.0953	0.1101	0.1525	0.8562	-1.0588
PM 13	0.0595	0.0321	0.0468	0.2177	2.3694	-1.0123
PM 12	-0.3430	0.0269	0.0361	6.6488	16.9696	-138.6667
PM 11	-4.7327	0.0319	0.0458	126.4490	208.9470	-3658.9065
PM 10	-1.5827	0.0407	0.0555	31.9718	19.9267	-762.5000
PM 09	-11.6625	0.0616	0.0709	322.5540	22.7273	-9297.5000
AT 13	2.6861	1.5606	1.6949	12.9121	222.6335	0.0212
AT 12	3.0535	1.6517	1.7829	25.9142	706.8947	0.0001
AT 11	1.7896	1.6642	1.6902	1.7415	40.5052	0.0000
AT 10	1.7526	1.6204	1.6595	1.4674	29.0281	0.0000
AT 09	1.7803	1.7091	1.7416	1.0493	8.4755	0.0000

Source: Author's own calculation based on the AMADEUS database

3 Discussion

In the period under review, there were differences in the development of the return on equity. In the CR the indicator fell sharply, from more than 20% in 2009 to the value around 11.5% in 2012 and 2013. The initial development in Poland was the same: the initial sharp decline from more than 21% in 2009 to values around 13.5%. In the last year of the research, however, the return rose to 15.5% - see Figure 4.



Source: Author's own processing

Figure 4: The development of the ROE

The main factor that caused the decline in return on equity in the CR was the reduction of the profitability of total assets, which declined by 4.08 pp. This decline was influenced by the decreasing profit margin, but also by the decline in assets utilization. Both these indicators are connected with the above-identified decline in the construction production by 25 pp. Another factor that reduces the ROE in the CR is a decrease of the financial leverage indicator; in 2013, the companies used fewer external resources than in the previous year. The indicators of tax and interest burden remained without significant changes in the period monitored.

In Poland, a significant difference in assets utilization is obvious; it is lower than in the CR at the beginning of the period monitored, but does not show any decline in that period; in 2012, it is even higher than at the beginning of the period monitored. Overall, the return on equity in Poland is influenced by the decrease of return of total assets by 5.3 pp, which is caused only by a declining profit margin. The value of the profit margin for the monitored period decreased by 2.41 pp. In 2013, the values of both indicators grew, by which they supported the growth of return on equity. The financial leverage indicator grew until 2011, and slightly decreased in subsequent years. In comparison with the CR, the value of this indicator was lower in 2009 and 2010. With the increase of the volume of construction production, the indebtedness also increased; the effect on the ROE values, however, showed only after 2011.

Conclusion

In the period monitored, the construction industry in the CR experienced a drop: from 2008, it fell by 150 billion CZK. This drop was significantly contributed to by the state sector, which decreased the value of construction contracts by 97 billion CZK, representing 65% of the total decline of the construction industry. In the monitored period, return on equity decreased by 8.77 pp, mainly as a result of reducing the turnover of assets and financial leverage.

In Poland, a strong influence of construction investments is seen primarily because of the European Football Championship in 2012. On the basis of investments to highway and railway networks it can be derived that the volume of investments financed by the state grew. This was also reflected in the results of companies operating in the construction: the average return on equity grew by 5.77 pp.

From the perspective of the entire industry, a different approach of both countries to dealing with the existing situation is obvious. In the case of the CR, the expenditure on construction investments decreased, in the case of Poland increased. In companies, a similar development is seen in the profit margin indicator, which is declining in both countries. The opposite trend is shown by the financial leverage: for most of the monitored period, the Czech companies decreased their indebtedness, unlike the Polish companies, which initially increased and only subsequently decreased their debts. The 'return on assets' indicator did not show a significant change in Poland; but in the CR, it declined significantly.

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Filter Methods of Variable Selection for Enterprise Credit Risk Prediction

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Abstract

Purpose of the article. Credit risk continues to be the major source of risk and possible losses in the activity of credit institutions of any type. In context of fast developing informational infrastructure and modern technology, credit risk modelling practitioners face new challenges. Nowadays loan analysis systems allow analysing wide range of possible independent variables, starting from hundreds to tens of thousands possible credit risk indicators. This article focuses on variable selection techniques for credit scoring models with different types of classifiers, including statistical and artificial intelligent classifier. Authors compare different approaches of variable selection techniques, including filters, wrappers and embedded methods, identifying their advantages, disadvantages and limitation to practical use. As a result of the article, filter methods of variable selection are presented and tested on real world dataset.

Methodology/methods. The article uses the following methods – modelling, statistical analysis and evaluation of corporate data.

Scientific aim. The aim of the article is provide filter methods of variable selection techniques, which can be used as pre-processing step, before using wrapper methods or selecting variables for credit risk assessing models. Provided methods reduce number of possible variables by removing redundant and irrelevant variables by applying bivariate analysis techniques.

Findings. The research results will contribute to the development of multidimensional state-of-the-art credit risk assessment and pricing model, appropriate to use in terms of the challenging modern financial market.

Conclusions. Different types of feature extraction and variable selection techniques are appropriate for solving different tasks and in different situations. Even though filter methods are computationally convenient, but they are not appropriate to optimal set selection. Wrapper methods are most accurate, but face the problem of curse of dimensionality effect. Authors provide filter techniques for variable selection, the reliability of which is tested by empirical research.

Keywords: variable selection, credit risk, filters, wrappers, credit scoring

JEL Classification: G32

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Introduction

Modern technology and data processing systems allow the analysis of a wide range of data from the credit offices, different initial registers, social networks as well as large amount of unstructured information (BIG DATA) from the global Internet network. Some of the credit market innovators claim to have distinguished even 70 thousand significant variables (Pymnts, 2014). On the one hand, such a large amount of initial information allows the detailed analysis; on the other hand it is challenging task not only for the information technology professionals, creating specialized databases but also for credit risk experts who have to take the decisions related to the creation of such variables and their inclusion to the model.

The issue of creating and including variables into the model is not new and it has been discussed in detail in the scientific literature: in Lithuania this issue has been analysed by Dzidzevičiūtė (2010, 2012), abroad: Cateni et al. (2013), Bolon-Canedo et al. (2013), Finlay (2012), Shipperlee (2008), Anderson (2007), Tan (2007), Siddiqi (2006), Guyon, Elisseff (2003), Blum, Langley (1997) and many other authors. Despite the fact that this issue has been discussed in detail in the scientific literature, it might be claimed that the issue of the selection of variables has not been studied sufficiently in Lithuania. A large proportion of the studies conducted in Lithuania that analysed the credit risk evaluation issues were oriented to the analysis of the application of the already constructed models (Budrikienė, Paliulytė, 2012; Garškaitė, 2008; Mackevičius, Silvanavičiūtė, 2006) or to the development of new models (Dzidzevičiūtė, 2013; Mileris, 2011; Purvinis, Šūkys, Virbickaitė, 2005), while there is a lack of research studies analysing the problem and methods for the selection of variables. Such a study is necessary for two main reasons. Firstly, credit risk assessment in Lithuanian enterprises requires a separate model developed on the basis of the specific national characteristics of the selected segment's population. Secondly, the selection of variables is an important model creation stage influencing qualitative characteristics of the whole model.

The object of research – variables of enterprise credit risk assessment models.

The aim of research – to offer variable construction and selection methods that might be applied in the current Lithuanian market conditions when making the model of credit risk assessment.

To achieve the aim the following objectives have been set: 1) to analyse and compare different approaches to variable selection; 2) to determine the most frequent variable selection methods applied by researchers; 3) to analyse the scientific literature and to identify the most commonly applied variables in the field of credit risk assessment; 4) when using filter methods to select the most suitable credit risk variables, considering their discriminatory power and interdependence, out of the long list of ratios.

In order to accomplish the objectives the following general research methods were applied: the analysis of scientific literature sources, synthesis, induction, deduction, abstraction, analogy. The statistical analysis of enterprise financial data was carried out in the analytical research.

The paper consists of four parts. The first part analyses approaches towards the variable construction and selection provided in the scientific literature and the most common variable selection methods used in the credit risk assessment models. The second part, on the basis of a detailed analysis of the scientific literature, provides a long list of financial ratios that are predominant in the credit risk assessment. The third part provides the methodology of the research. The fourth part presents the variables selected using filter methods out of the long list of ratios for the creation of bankruptcy prediction model according to the example of Lithuanian enterprises.

1 Variable selection methods

Researchers and practitioners, analyzing the systems of classifications models, unanimously agree on the positive impact of application of variable selection models for the quality of the models (Cateni et al., 2012; Finlay, 2012; Mileris, 2011; Ioniță, Șchiopu, 2010; Mays, Lynas, 2010; Yang, Duan, 2008; Anderson, 2007; Siddiqi, 2006; Guyon, Elisseff, 2003). Variables are selected from the original set of variables by eliminating the irrelevant, inter-related and redundant variables, thus reducing the original set (the subset is selected). The process of variable selection increases the accuracy and sustainability of models, provides a better understanding of the researched phenomenon and factors influencing it.

Variable selection issue is not new and it has been analysed in detail by the researchers from the different branches of science: medicine (Thompson, 2009; Austin, Tu, 2004), informatics (Catania, Garino, 2012), economics (Dzidzevičiūtė, 2010, 2013) and others. The selection of variables is one of the prediction model creation stages, which leads to their frequent use when dealing with such tasks as face recognition (Gu et al., 2012), gene expression (Lazar et al., 2012), identification of microorganisms (Davey et al., 1999). In economics variable selection methods are applied when addressing these issues: bankruptcy prediction (Tsai, 2009; Shin et al., 2005), credit risk assessment (Ioniță, Șchiopu, 2010; Hörkkö, 2010), the prediction of future trends stock price (Tsai, Hsiao, 2010; Lee, 2009) and many other issues, addressing which the one faces with huge amount of information from which qualitative variables, suitable to be included into the constructed model, shall be selected. There are various variable selection techniques that can be found in the

scientific literature of economics, analysing the decision support systems and prediction models (Table 1). As it can be seen from the provided data, usually authors construct initial variables on the basis of literary analysis or expert assessment. The scientific literature generally distinguishes the following three irrelevant properties of variables that need to be taken into account when constructing variables by heuristic methods (Finlay, 2012; Anderson, 2007; Siddiqi, 2006; Guyon, Elisseeff, 2003):

- 1) Consistency;
- 2) Conformity of model creation aims;
- 3) Conformity of information quality requirements.

Table 1 Variable selection methods in the scientific literature

Work	Study area	Initial ratios selection method	Feature ranking methods	Feature extraction methods	Optimal set selection methods	Model based on
Atiya (2001)	Credit scoring	Literature review	IG; CM	Not used	Not used	NN
Shin et al. (2005)	Bankruptcy prediction	Not specified	T-T	Not used	Stepwise regression	SVM
Roobaert, Karakoulas (2006)	Credit scoring	Not specified	IG, CM, Induction	Not used	Not used	SVM
Tsai (2009)	Bankruptcy prediction	Expert judgment	CM; T-T	FA; PCA	Stepwise regression	NN
Enke, Thawornwong (2009)	Stock return forecasting	Expert judgment	IG	Not used	Stepwise regression	NN
Lee, 2009	Stock trend prediction	Expert judgment	F-T	Not used	Supported sequential forward search	SVM
Hörkkö (2010)	Credit scoring	Literature review; Expert judgment	IG; LLR; CHSQT	Not used	Backward elimination; Forward selection; Aikake Information Criteria	LR
Ioniță I., Schiopu D. (2010)	Credit scoring	Not specified	CM	PCA	Not used	NI
Tsai, Hsiao (2010)	Stock price prediction	Literature review	NU	CART, GA, PCA	Not used	NN
Dzidzevičiūtė (2013)	Credit scoring	Expert judgment	IG	Not used	Stepwise regression	LR
Oreski, Oreski, 2014	Credit Scoring	Not specified	IG, SCC, GINI, GR	Not used	Hybrid Heuristic – GA-NN model	NI

Source: Compiled by authors

Abbreviations:

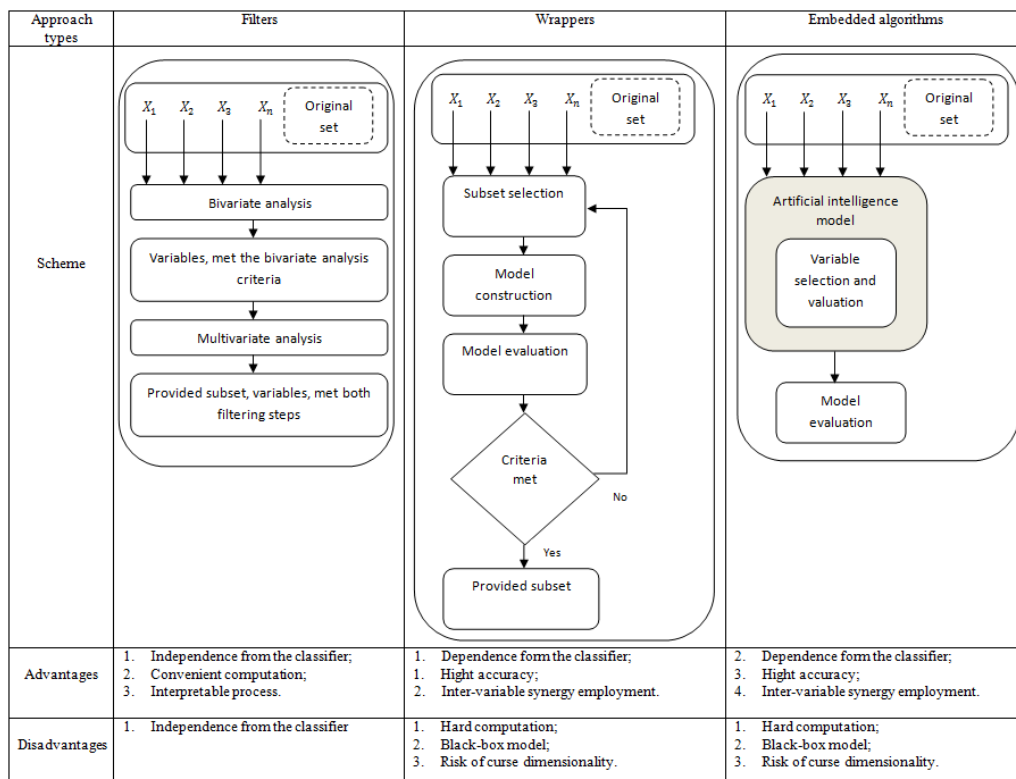
Feature ranking methods: A-t – Adequacy test; IG – information gain; CM – correlation matrix; SCC- Spearman correlation coefficient; ULR – univariate regression; Wald – Wald test; GR-Gain Ratio; F-T – F test; LLR – log likelihood ratio test; CHSQT – Chi-squared tests; P-c – Partial correlation; T-T – T test.

Feature extraction methods: PCA – principal component analysis.

Model based on: CART – Classification and regression tree; C4.5 – C4.5 decision tree algorithm; GA – genetic algorithm; KNN – k-nearest neighbor; LR – logistic regression; NN – neural networks; NI – not implemented.

Method of information value, the correlation matrix and chi-square methods are the most commonly used methods for variable connection with result ratio. The authors rarely use the methodology for variable creation but the most popular among the used ones is principal component analysis. A stepwise regression was applied in almost all investigated works to select the optimal combination of variables. The correlation between variables is usually analysed by using correlation matrices – the method of bivariate analysis allowing assessing the interdependence of variables. However, as it can be seen from the provided data, not all authors choose this test. The majority of authors assess the multicollinearity at the time of sub-set creation or skip this step.

In the scientific literature there are three approaches of variable selection (Bolon-Canedo et al. 2013; Cateni et al.2013; Tan, 2007; Guyon, Elisseeff, 2003; Blum, Langley, 1997): variable selection filters, wrappers and embedded algorithms (Figure 1).



Source: created by authors according to Bolon-Canedo et. al. (2013); Cateni et. al. (2013)

Figure 1 Different approaches to variable selection

Filters is the type of methods based on the assessment of individual variable properties. The process can be divided into two stages: bivariate analysis, during which the discriminant power of the variable is assessed and multivariate during which the *multicollinearity* is assessed. The method of information value and X^2 (Chi-squared test) are most often used in bivariate analysis to evaluate the individual discriminatory characteristics of variables. Spearman correlation coefficient is usually applied in order to evaluate the relation between variables (Cateni et al., 2013; Finlay, 2012; Dzidzevičiūtė, 2010; Anderson, 2007) (Table 1).

Filtering methods are attractive due to their simplicity of implementation and the possibility to easily interpret the results. The disadvantage of filter methods – the independence from the classifiers which may have a negative effect on the accuracy of the model.

Wrappers and embedded algorithms are based on brute-force approach – the algorithm selects the subset of variables, constructs the model and when the characteristics of the model are evaluated; if the results are not satisfactory – the process is repeated (Figure 1). The advantage of brute-force algorithms is their ability to evaluate the discriminatory characteristics of the variable subset and these characteristics may differ from the ones of individual variables (Tan, 2007). The main disadvantage of this method group is that it is impossible to interpret the received results although the authors identify the methods of this group as the most accurate (Khushaba et al., 2008; Tan, 2007). Usually brute-force algorithms are receptive to computer resources and their practical application may not be possible in case of observable number of original variables. As a way out they can be applied together with other optimization methods such as filters. In the case the filter were in the pre-stage and provided the already selected variables, eliminating the redundant and inappropriate and brute-force algorithms would select the best possible subgroup (set). Such hybrid variable selection models were suggested by Sanchez-Marono and others (2007) and Oreski and Oreski (2014) in their publications. Some authors draw attention to the problem of curse dimensionality, which is typical for brute-force algorithms and results from the relation between the model and the classifier. Due to this problem the model only works reliably in the training dimension (Bolon-Canedo et al. 2013; Cateni et al. 2013; Tan, 2007; Guyon, Elisseeff, 2003).

In the scientific literature, analysing the issues of credit risk model construction, filter methods are generally proposed to be applied for variable selection and the set of original variables is proposed to be formed from the expert approach, regarding the aim of model's construction and target segment (Finlay, 2012; Dzidzevičiūtė, 2010; Mays, Lynas, 2010; Anderson, 2007; Siddiqi, 2006).

2 Variable selection for enterprise credit risk assessment

In order to create the long list of ratios, a thorough analysis of scientific literature was carried out, 40 works of authors and in total 101 different credit risk and bankruptcy prediction models were analysed. In the analysed literature authors distinguished 168 different relative financial ratios. During the analysis, the aim was to identify the most often analysed financial ratios and the groups of financial ratios in the scientific literature.

The analysis showed that the most often applied relative financial ratios in the analysed works were the coefficient of short-term solvency, the relation between the retained profit and asset, the relation between income from sales and asset, the relation between income before interest, taxes, depreciation and amortization and asset, the relation between working capital and asset. 218 different variables were applied in the analysed models. The expanded but not complete summary of most frequently used ratios and frequency of their use is provided in the table (Table 2).

In order to better understand the general tendenciality of financial ratios application, the authors grouped the ratios, distinguishing them into groups of short-term and long-term solvency, profitability, asset structure, operational efficiency, cash flow, dynamic growth, market value, fixed assets, capital market and "another" group of ratios, which included the nowhere attributed ratios. The most frequent ratios in the analysed works are as follows: profitability ratios (15.29%), short-term solvency ratios (13.53%), expenditure level ratios (13.53%) and asset structure ratios (10.59%), long-term solvency ratios (10%), asset turnover ratios (10%). The most rarely applied ratios were those of tangible asset (1.79%) and capital market ratios (1.18%).

3 Methodology of research

During the theoretical research, the financial ratios, suggested by the scientists and suitable to be used for borrower's credit risk assessment were analysed. From the created long list of ratios, it is necessary to select the credit risk assessment ratios that are the most appropriate for segment of Lithuanian enterprises. The research is based on the assumption that the borrower is bad if the probability of his bankruptcy is high. Therefore, the further research aims to identify the ratios that might help to distinguish between the successful companies and those which went bankrupt. These ratios could be used when constructing the model for credit risk assessment.

Data collection. While organizing the research, first of all, the population, sampling, minimal screening scope and the method of source data acquisition were determined.

Population. After the evaluation of the tendencies of bankruptcy development in Lithuania and with regard to the statistics of the business failures, companies from the construction and transport & storage sectors were selected for the present research. The choice was determined by the following factors

1. According to the data of the Statistics Lithuania, there were 84574 economic operators in Lithuania on 1 January 2009, whereas on 1 January 2013, the number was 86929. The majority of the economic operators was constituted by business units working in the fields of manufacturing, construction, wholesale & retail trade, and transport & storage (on 1 January 2009, respective to the type of the economic activity 8.7%; 8.4%; 26.3%; 7.2%; on 1 January 2013, 7.8%; 6.9%; 25%; 7.5%).

2. What concerns these four major sectors, in 2009-2013, most of bankruptcy processes were initiated in the construction, wholesale & retail trade, transport & storage sectors (in 2009, respective to the type of the economic activity 23.6%; 23.2%; 14.9%).
3. The analysis of the sectors which show the highest bankruptcy rate reveals the fact that the construction and transport & storage sectors have the highest per cent of the initiated bankruptcy processes in the respective year regarding the whole number of economic operators in the sector registered in the beginning of the year (in 2009, respective to the type of the economic activity 6,1%; 4,5%). Analogical tendency was observed till 2013. The latter reason is one of the main factors that determined the choice of the sector for the present research.

The population size. The present research is concerned with the construction companies filed for bankruptcy in 2009-2013. That is, 1571 bankruptcy processes were initiated in the construction sector during this period. During this period the process of bankruptcy was initiated for 873 companies in construction and transport & storage sectors.

Table 2 Most frequently applied relative financial ratios

No.	Variable	Sources	Fr.
1	Sales / Total Assets	2; 14; 17; 22; 23; 24 27; 32;34; 37; 3; 5; 7; 8; 15; 17; 19; 24; 31; 3; 5; 8; 15; 31; 37; 14; 19; 27; 5; 24; 24; 36; 7; 21 ; 27; 9; 38; 40; 5; 14	42
2	Current Assets / Current Liabilities	15; 16; 34; 35; 37; 19; 22; 14; 24; 5; 7; 15; 16; 21; 34; 35; 36; 37; 3; 5; 16; 34; 35; 37; 17; 22; 20; 24; 35; 37; 35; 21; 7; 36; 7; 21; 38; 40; 5	40
3	Retained Earnings / Total Assets	10; 14; 15; 19; 27; 35; 5; 15; 17; 18; 19; 26; 32; 35; 3; 5; 19; 27; 35; 14; 16; 19; 27; 28; 29; 32; 5; 15; 35; 36; 21; 27; 9; 5; 14; 27	37
4	Working Capital/Total Assets	1; 2; 17; 34; 35; 1; 3; 7; 8; 34; 35; 36; 17; 24; 8; 17; 19; 22; 34; 1; 8; 12; 14; 17; 4; 7; 4; 36; 6; 8; 2	31
5	EBIT / Total Assets	15; 16; 17; 20; 22; 34; 35; 37; 1; 7; 8; 15; 16; 17; 34; 36; 35; 37; 15; 20; 24; 7; 22; 35; 37; 4; 20; 36; 27; 40	30
6	Equity/ Total Liabilities	13; 14; 27; 24; 34; 35; 5; 7; 24; 34; 35; 5; 27; 14; 27; 5; 21; 9; 5; 14	21
7	Net profit /Sales	13; 19; 23; 37; 39; 11; 16; 19; 25; 26; 3; 19; 22; 27; 33; 37; 6; 19; 5; 9	20
8	Growth Rate of Total Debt	2; 17; 19; 1; 7; 8; 17; 19; 8; 17; 19; 1; 8; 17; 19; 7; 21; 8; 2	19
9	Gross profit / Sales	15; 30; 35; 15; 18; 25; 35; 35; 15; 24; 35; 19; 27; 21; 38; 40	16
10	Equity / Sales	14; 19; 20; 30; 3; 19; 3; 19; 20; 14; 19; 20; 20; 38; 40; 14	16
11	EBIT / Sales	15; 19; 37; 15; 19; 36; 19; 37; 19; 15; 19; 21; 37; 36; 21	15
12	Current assets / Sales	5; 20; 37; 3; 5; 18; 3; 5; 37; 29; 5; 20; 20; 5	15
13	Total Liabilities / Total Assets	10; 15; 17; 34; 35; 37; 15; 34; 35; 15; 17; 34; 35; 17	14
14	Inventory / Total Assets	22; 37; 5; 36; 3; 5; 22; 37; 22; 5; 37; 36; 5	14
15	Current Liabilities / Sales	16; 19; 34; 37; 19; 34; 16; 19; 34; 37; 16; 19; 27	13
16	Increase (Decrease) in Cash Flow/Cash and Cash Equivalents	16; 37; 5; 16; 3; 5; 16; 37; 34; 8; 5; 5	13
17	Equity / Total Debt	20; 14; 5; 3; 5; 14; 5; 20; 20; 5; 14	12
18	Cash Flow / Sales	37; 3; 5; 36; 3; 5; 14; 37; 5; 36; 5	12
19	Total Debt / Total Asset	15; 19; 37; 15; 19; 36; 19; 37; 19; 15; 36	11
20	EBITDA / Total Assets	2; 17; 37; 17; 17; 37; 17; 37; 2	9
21	ROE=Net profit / Equity	22; 31; 18; 25; 31; 36; 22; 22; 36	9
22	Net fix asset / Fix Assets	27; 35; 35; 27; 35; 27; 35; 27; 27	9
23	(Interest-Sensitive assets) / Liabilities	2; 15; 35; 15; 35; 35; 15; 35; 2	9
24	Sales / Fixed assets	20; 30; 16; 36; 27; 5; 20; 20; 27	9
25	Cost of sales/Sales	16; 22; 18; 25; 2; 16; 22; 33; 22	9

Source: created by authors

Abbreviations (sources): 1- Altman (1968); 2- Altman, Sabato (2007); 3- Angelini et al. (2008); 4- Bužius et al. (2010); 5- Chen, Du (2009); 6- Cubiles-De-La-Vega et al. (2013); 7- Danėnas et al. (2011); 8- De Andres et al. (2011); 9- Dimitras et al. (1999); 10- Dzidzevičiūtė (2010); 11- Frydman et al. (1985); 12- Fulmer (1984); 13- Grigaravičius (2003); 14- Gurny, Gurny (2013); 15- Huang et al. (2004); 16- Lin (2009); 17- Lorca et al. (2013); 18- Mileris (2012); 19- Min, Jeong (2009); 20- Min, Lee (2005); 21- Mori, Yasushi (2007); 22- Nikolic (2013); 23- Ohlson (1980); 24- Olson et al. (2012); 25- Pacelli, Azzollini (2011); 26- Pompe, Feelders (1997); 27- Ryser, Denzler (2009); 28- Springate (1978); 29- Tafler, Tisshaw (1977); 30- Tseng, Hu (2001); 31- Tseng, Hu (2010); 32- Varetto (1998); 33- Vasiliauskaitė, Cvilikas, 2008; 34- Wang et al. (2005); 35- Wang, Ma (2012); 36- Wu, Hsu (2012); 37- Zhang, Hardle (2008); 38- Zhou, Tian (2006); 39- Zmijevski (1984); 40- Zopoudinis, Doumpos (1999).

Sampling. In statistic investigation, the relevant data is obtained by means of sampling. Sampling is defined as a part of the population selected for the research which can properly and sufficiently represent the population and provide necessary information. The elements of the population for the research were selected by means of probability sampling.

Screening scope. The results of the sampling are always more or less inaccurate. This inaccuracy decreases, whereas the precision of the conclusions increases when the screening scope is extended.

In order to ensure the quality of the acquired data, empirical calculation of 500 companies whose bankruptcy processes were initiated in 2009-2013 was carried out. These include 353 construction companies and 147 transport & storage companies.

475 companies that did not go bankrupt during the period and were still operating on 31 December, 2013 were also included in the research. Among these companies there are 338 from the construction sector and 137 – from transport & storage sectors.

Source data acquisition. Annual financial statements of 2007-2012 of the investigated companies were analysed.

Since bankruptcy processes for the investigated companies were initiated in 2009-2013, the financial data of the companies was taken from the period of three years before the bankruptcy initiation.

The following requirements were held for operating companies: 1) the company was operating in 2007 and has continued its activity up to now (i.e., 2014); 2) the company is not being liquidated, reformed, reorganized, restructured, it does not participate in separation, reorganization, etc.; 3) liabilities of the company did not exceed the assets of the company on 31 December, 2013. Here the idea is based on the assumption of Grigaravičius (2003) that the company is considered to be insolvent if its value (market and balance) is negative or equal to zero, i.e. the company's liabilities shall exceed the current asset of the company.

Research composition. In Lithuania the majority of business is small and medium business. Since small companies are very important for socio-economic development, it is admitted that in order to reduce the administrative burden, the accounting and financial statement in such companies shall be simplified. Lower requirements for financial statements of small companies are established in Law on Financial Statements of Entities of the Republic of Lithuania. Article 24 of this Law provides that the entities at least two ratios whereof on the last day of the financial year do not exceed the following limits for two consecutive financial years, including the reporting financial year, shall be allowed to draw up of an abridged balance sheet, abridged profit (loss) account, abridged notes on the accounts and not to draw up a cash flow statement: 1) net turnover during the reporting financial year – LTL 10 million; 2) the value of the assets specified in the balance sheet – LTL 6 million; 3) average annual number of pay-roll workers during the reporting financial year – 15 persons.

However, the users of financial statement want to get more information about financial statements. Financial statements that are not detailed enough do not allow calculating of all the desired company's financial ratios. When analysing the small companies, these limitations of research appear. Companies, making abridged financial statements:

1) may not issue statements of cash flows. Therefore, it is impossible to calculate the ratios of cash flow for such companies;

2) make abridged balance. Therefore it is impossible to calculate financial ratios that require more detailed financial data. Some examples are provided. Inventories that are not further grouped into components:

Raw material, work in progress, finished production. Current amounts receivable during one year are not specified, thus trade debtors cannot be accurately evaluated. All liabilities are only grouped into current liabilities and non-current liabilities. However, the components of smaller liabilities such as financial debts or payable trade amounts cannot be evaluated.

3) issue abridged income (loss) statement. Therefore there are limitations on the investigation of income and expenses. Sales are provided from revenue, cost of sales, operating expenses and income tax – from expenditure. The result of other activities, financing and investing activities – profit or loss – is provided and individually earned income and expenses in these activities cannot be evaluated. Therefore, it is not possible to calculate the financial ratios of expenditure level because interest expenses, employment costs and depreciation expenses are not known. Since the depreciation is unknown, EBITDA cannot be calculated either.

Profit (loss) statements used in Lithuania do not provide EBIT (Earnings before interest and taxes). Therefore, EBIT is substituted by Operating profit (loss) + other activities income (expenses) in models using EBIT.

In the analysed literature authors identified 168 different relative financial ratios, of which 25 main ratios are provided in Table 2. Due to the above mentioned limitations, it was not possible to calculate the following: 1) 16 cash flow ratios; 2) 34 due to lack of detail in balance (19, i.e. the largest part consists of ratios where financial debts are used); 3) 35 due to lack of detail in income (loss) statements (the largest part consists of ratios where interest expenses (16 ratios) and depreciation (7 ratios) are used).

What is more, the majority of Lithuanian companies are joint stock companies, thus it was not possible to evaluate the ratios of companies' capital market (8 ratios). In this research the ratios of established added value and company activity dynamics (total 21 ratios) were not analysed in this research – it is an area for further research. Having evaluated the limitations, 53 ratios were selected for the research.

Financial ratios are analysed in several aspects. First of all, they are analysed in the sector level – the ratios were investigated in Transport & storage sector, in Construction sector and in both sectors. Secondly, in the level of time – the aim was to find out if a) the ratios significantly changed a year, two or three years ago (Year-1, Year-2 and Year-3) until the bankruptcy, b) if these ratios differ from the successfully operating companies at that time.

Performance of research. In the first empirical stage of research the aim was to test all the relative financial ratios, the analysis of which was carried out in the theoretical part and which are used in the credit risk determination. In total 53 financial ratios are analysed in the research. Each financial ratio is examined in the financial statements of the companies which went bankrupt as well as of those which did not go bankrupt. The course of investigation of financial ratios will be provided.

Lets say that the financial ratio k ($k=1, 2, \dots, 53$) is investigated. This financial ratio is investigated in two samples: the financial statements of companies which went bankrupt ($B_{k1}, B_{k2}, \dots, B_{kn}$), as well as in the financial statements of companies which did not go bankrupt ($N_{k1}, N_{k2}, \dots, N_{kn}$). These samples were received when observing two independent random variables: 1) the financial ratio k in the financial statements of companies which went bankrupt and 2) the financial ratio k in the financial statements of companies which did not go bankrupt.

Before choosing a statistical test, it is necessary to verify that data are drawn from a normally-distributed population.

The main tests for the assessment of normality are Kolmogorov-Smirnov (K-S) test. The null hypothesis drawn H_0 : null hypothesis that the data come from a population that is not normally distributed. The alternate hypothesis H_1 is therefore that the data come from a normally-distributed population. If the results of the Kolmogorov-Smirnov test are significant ($p < \alpha$, there α – level of significance ($\alpha = 0.05$)) rejecting the null hypothesis means rejecting the assumption of normality for the distribution

If the assumption of normality has been violated, we use the Mann Whitney U test. The null hypothesis H_0 is drawn: the distributions of financial ratio of companies which went bankrupt and those which did not are equal. The alternate hypothesis H_1 : the distributions of financial ratio of companies which went bankrupt and those which did not are different. The decision is made based on the following provisions: 1) H_0 is rejected, distributions of financial ratio are not equal if $p < \alpha$; 2) H_0 is not rejected, distributions of financial ratio are equal if $p \geq \alpha$, ($\alpha = 0.05$).

If the assumption of normality is valid, we use the t-test. Ravisankar et al. (2011), Pustynick (2012) and other researchers used *t-test* in the empirical studies, during which the relative financial ratios, predicting the possibility of bankruptcy in the financial statements, were researched.

When applying *t-test* for two independent samples, it is necessary that the two samples would be selected from populations which have normal distributions and equal variances. Therefore, firstly the equality of variances is evaluated using Levene's Test. Then the hypothesis of equality of averages is verified.

Null hypothesis H_0 : financial ratio averages in the financial statements in the bankruptcy and non-bankruptcy companies do not differ. The alternate hypothesis H_1 : financial ratio averages in the financial statements of the bankruptcy and non-bankruptcy companies differ (The decision is made based on the following provisions: 1) H_0 is rejected, averages are not equal, if $p < \alpha$; 2) H_0 is not rejected, averages do not differ, if $p \geq \alpha$ ($\alpha = 0.05$).

4 Empirical Results and discussion

The assessment of normality. The results of the Kolmogorov-Smirnov test has reported that only the financial ratio Log TA come from a normally-distributed population. Therefore, this ratio is explored with the t-test. Other ratios are explored with the Mann Whitney U test.

Ratio selection. Tables 3-4 provide the results of research: the aim to to answer the question whether the analysed financial ratios The results of the Mann Whitney U test and the t-test (for are the financial ratio Log TA) also reported, indicating that in most cases the differences between the financial ratios in financial statements of the bankruptcy and non-bankruptcy companies are statistically significant.

Having analysed *the main* financial ratios (Having carried out the theoretical study, these ratios are distinguished in Table 2 as the most frequently analysed ratios in the scientific works), it was established that 1) eight ratios (CA/CL; RE/TA; WC/TA; Eq/TL; NP/S; Eq/S; TL/TA; CL/S) statistically significantly differ in the financial statements of of the bankruptcy and non-bankruptcy companies.

From the analyzed 35 *additional* ratios (see table 4), 16 ratios (Cash/CL; Eq/TA; Cash/TA; WC/S; S/ Cash; EBIT/CL; EBT/S; (CL- Cash)/TA; (Cash-I)/CL; (CA-I)/CL; Cash/TL; AR/TL; CA/TL; EqA; WC/OE; Eq/FA) statistically significantly differ (see Table 4). The difference existed when investigating the companies in both sector and time levels.

Table 5 shows the Spearman correlation matrix for the variables. There is a strong correlation among some of the ratios. For instance, TL/TA has a strong negative correlation with five ratios (CA/CL, RE/TA, WC/TA, Eq/TL, Eq/S); Eq/TL has a strong positive correlation with three ratios (CA/CL, RE/TA, WC/TA). Therefore, when further constructing the credit risk model, it is appropriate to consider the possibility to remove from the model some of the ratios that strongly correlate with each other.

Other ratios may be divided into several groups:

First group of ratios. Ratios which: significantly differ at the sector level; 2) significantly differ at the time level –one or two years (i.e. Year-1, Year-2) before bankruptcy, differ in in the bankruptcy and non-bankruptcy companies.

Table 3 Exploration of *main* variables for credit risk detection^a

Variables ^b	Both sectors				Transport & storage sector				Construction sector			
	All Year	Year-1	Year-2	Year-3	All Year	Year-1	Year-2	Year-3	All Year	Year-1	Year-2	Year-3
S/TA	0.265	0.444	0.083	0.463	0.435	0.116	0.113	0.153	0.298	0.746	0.234	0.983
CA/CL	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
RE/TA	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WC/TA	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Eq/TA	0.000	0.000	0.000	0.042	0.000	0.000	0.000	0.044	0.000	0.000	0.000	0.223
Eq/TL	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NP/S	0.000	0.000	0.000	0.007	0.000	0.000	0.000	0.032	0.000	0.000	0.000	0.044
GP/S	0.000	0.000	0.000	0.068	0.000	0.000	0.005	0.133	0.000	0.000	0.005	0.238
Eq/S	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
EBIT/S	0.000	0.000	0.000	0.169	0.000	0.000	0.000	0.227	0.000	0.000	0.000	0.327
CA/S	0.000	0.000	0.233	0.024	0.000	0.000	0.001	0.012	0.702	0.352	0.176	0.311
TL/TA	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
I/TA	0.000	0.130	0.000	0.000	0.325	0.080	0.081	0.007	0.000	0.001	0.000	0.000
CL/S	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ROE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.113	0.000	0.000	0.000	0.000
S/FA	0.002	0.357	0.012	0.336	0.000	0.173	0.000	0.002	0.630	0.844	0.914	0.377
CS/S	0.000	0.000	0.000	0.068	0.000	0.000	0.005	0.133	0.000	0.000	0.005	0.238
NP/TA	0.000	0.000	0.000	0.003	0.000	0.000	0.000	0.004	0.000	0.000	0.000	0.072

^aAll variables are tested with Mann-Whitney U test

^bS/TA= Sales / Total Assets; CA/CL= Current Assets / Current Liabilities; RE/TA= Retained Earnings / Total Assets; WC/TA= Working Capital/Total Assets; Eq/TA= EBIT / Total Assets; Eq/TL= Equity/ Total Liabilities; NP/S= Net Profit/ Sales; GP/S= Gross Profit / Sales; Eq/S= Equity / Sales; EBIT/S= EBIT / Sales; CA/S= Current Assets / Sales; TL/TA= Total Liabilities / Total Assets; I/TA= Inventory / Total Assets; CL/S= Current Liabilities / Sales; ROE= Net Profit / Equity; S/FA= Sales / Fixed Assets; CS/S= Cost of Sales/Sales.

**significant at the 5% level

However in case of Year-3, it may not be claimed that the ratio significantly differ in the groups of bankruptcy and non-bankruptcy companies (it is fixed in one of the sectors). These are: 1) three ratios from the list of main ratios (see Table 3): Eq/TA ir NP/TA (Year-3, in the sector of construction the ratio does not show a significant difference among bankruptcy and non-bankruptcy companies), ROE (Year-3, in the transport sector the ratio does not show a significant difference among bankruptcy and non-bankruptcy companies); 2) three ratios from the list of additional ratios (see Table 4): EBT/TA (Year-3, in the sector of construction the ratio does not show a significant difference among bankruptcy and non-bankruptcy companies). EBT/Eq and Cash/Eq (Year-3, in the transport sector the ratio does not show a significant difference among bankruptcy and non-bankruptcy companies);

The second group of ratios. Ratios which significantly differ in one sector. This sector is observed in all years (All Year, Year-1, Year-2, Year-3). However these ratios are not suitable to be used in another sector. Ratios, that are suitable to analyse companies in transport sector: CA/S, I/CL, AR/(TL-Cash), CA/(TL- Cash), CA/TA. Ratios, which are suitable to analyse companies in construction sector: I/TA, S/I, AR/I.

Table 4 Exploration of *additional* variables for credit risk detection^a

Variables ^b	Both sectors				Transport & storage sector				Construction sector			
	All Year	Year-1	Year-2	Year-3	All Year	Year-1	Year-2	Year-3	All Year	Year-1	Year-2	Year-3
Cash/CL	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Eq/TA	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Cash/TA	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
LTA/Eq	0.000	0.000	0.004	0.135	0.000	0.000	0.094	0.002	0.000	0.000	0.075	0.951
S/I	0.000	0.024	0.000	0.002	0.087	0.406	0.093	0.009	0.000	0.000	0.000	0.005
S/AR	0.388	0.422	0.774	0.231	0.046	0.006	0.890	0.319	0.870	0.438	0.760	0.359
WC/S	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
S/ Cash	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
EBT/TA	0.000	0.000	0.000	0.003	0.000	0.000	0.000	0.004	0.000	0.000	0.000	0.075
GP/TA	0.000	0.000	0.001	0.117	0.002	0.117	0.013	0.048	0.000	0.000	0.015	0.517
EBT/Eq	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.101	0.000	0.000	0.000	0.000
EBIT/CL	0.000	0.000	0.000	0.006	0.000	0.000	0.000	0.035	0.000	0.000	0.000	0.045
EBT/(Eq-CL)	0.000	0.000	0.009	0.345	0.000	0.000	0.010	0.931	0.000	0.000	0.142	0.298
EBT/S	0.000	0.000	0.000	0.008	0.000	0.000	0.000	0.036	0.000	0.000	0.000	0.048
(CL-Cash)/TA	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000
(Cash-I)/CL	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
(CA-I)/CL	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WC/Eq	0.000	0.000	0.156	0.559	0.126	0.000	0.867	0.690	0.000	0.000	0.048	0.286
I/CL	0.000	0.000	0.052	0.254	0.000	0.000	0.299	0.221	0.000	0.000	0.185	0.090
Cash/TL	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Cash/Eq	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.078	0.000	0.000	0.000	0.000
CL/(TL-Cash)	0.018	0.055	0.119	0.041	0.081	0.945	0.284	0.021	0.004	0.081	0.063	0.001
AR/(TL-Cash)	0.002	0.000	0.420	0.990	0.000	0.000	0.006	0.006	0.411	0.026	0.828	0.270
AR/TL	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Eq/(Eq+LTL)	0.000	0.205	0.000	0.000	0.000	0.499	0.000	0.000	0.000	0.121	0.000	0.000
CA/TL	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CA/(TL-Cash)	0.000	0.000	0.032	0.662	0.000	0.000	0.000	0.000	0.004	0.000	0.262	0.479
CA/TA	0.000	0.008	0.003	0.018	0.000	0.000	0.000	0.000	0.708	0.633	0.484	0.662
EqA	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
AR/I	0.000	0.005	0.000	0.000	0.022	0.881	0.154	0.005	0.000	0.001	0.000	0.004
S/C	0.000	0.198	0.000	0.000	0.147	0.969	0.142	0.083	0.000	0.130	0.000	0.000
WC/OE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Log TA	0.000	0.758	0.000	0.013	0.030	0.736	0.001	0.120	0.001	0.546	0.000	0.048
Eq/FA	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Log S	0.228	0.105	0.005	0.023	0.045	0.490	0.013	0.205	0.782	0.021	0.073	0.048

^a The variables are tested with Mann-Whitney U test. The variable Log TA is tested with t-test;

**significant at the 5% level

^bNP/TA= Net Profit/Total Assets; Cash/CL= Cash /Current Liabilities; Eq/TA= Equity/Total Assets; Cash/TA= Cash /Total Assets; LTA/Eq= Long-Term Assets/Equity; S/I= Sales/ Inventory; S/AR= Sales/Accounts Receivable; WC/S= Working Capital/Sales; S/Cash= Sales/Cash; EBT/TA= EBT/Total Assets; GP/TA= Gross Profit/Total Assets; EBT/Eq= EBT/ Equity; EBIT/CL= EBIT/Current Liabilities; EBT/(Eq-CL)= EBT/(Equity - Current Liabilities); EBT/S= EBT/Sales; (CL- Cash)/TA= (Current Liabilities - Cash)/ Total Assets; (Cash-I)/CL= (Cash - Inventories)/ Current Liabilities; (CA-I)/CL= (Current Assets - Inventories)/Current Liabilities; WC/Eq= Working Capital/Equity; I/CL= Inventory/Current Liabilities; Cash/TL= Cash/Total Liabilities; Cash/Eq= Cash/ Equity; CL/(TL - Cash) = Current Liabilities/(Total Liabilities - Cash); AR/(TL - Cash) = Accounts Receivable/(Total Liabilities - Cash); AR/TL= Accounts Receivable/Total Liabilities; Eq/(Eq+LTL)= Equity/(Equity + Long-Term Liabilities); CA/TL= Current Assets/Total Liabilities; CA/(TL-Cash)= Current Assets/ (Total Liabilities - Cash); CA/TA= Current Assets/Total Assets; EqA= (Equity - Intangible Assets)/(Total Assets - Intangible Assets -Cash -Lands and Buildings);

AR/I= Accounts Receivable/Inventories; S/C= Sales/Capital Stock; WC/OE= Working Capital/Operating Expenses; Log TA= Logarithm of Total Assets; Eq/FA= Equity/Fixed Assets; Log S= Logarithm of Sales.

The third group of ratios. Other ratios are not suitable to identify the differences among the bankruptcy and non-bankruptcy companies. The ratio S/TA should be mentioned separately: this ratio does not differ among the bankruptcy and non-bankruptcy companies in both sector and time levels (see Table 3).

Table 5 Correlation matrix

Variables	CA/CL	RE/TA	WC/TA	Eq/TL	NP/S	Eq/S	TL/TA	CL/S
CA/CL	1,000							
RE/TA	0,584**	1,000						
WC/TA	0,923**	0,608**	1,000					
Eq/TL	0,778**	0,710**	0,738**	1,000				
NP/S	0,318**	0,469**	0,333**	0,357**	1,000			
Eq/S	0,585**	0,597**	0,556**	0,798**	0,229**	1,000		
TL/TA	-0,756**	-0,709**	-0,761**	-0,974**	-0,345**	-0,802**	1,000	
CL/S	-0,624**	-0,441**	-0,589**	-0,552**	-0,355**	-0,192**	0,571**	1,000

**significant at the 5% level

Conclusion

The process of variable selection and inclusion into the model is an important stage of constructing the credit risk assessment models and it determines the qualitative characteristics of the model. Three groups of variable selection methods are distinguished: filters, wrappers and embedded methods. The filter methods are based on the assessment of properties of individual variables such as predictive power and interdependence. This group of methods is characterized by non-complicated application and the possibility to interpret the results received. Wrappers and embedded methods are characterized by higher accuracy however, their results cannot be interpreted and the application is burdened by the receptivity of computer resources. Filter methods are more popular in the literature that analyses the issues of credit risk assessment. Filter methods are also used to reduce the amount of original variables before the application of brute-force algorithms, which allows to significantly reduce the insistence for computer resources.

168 different relative financial ratios, used in the scientific works to investigate the credit risk, were distinguished during the theoretical analysis.

During the empirical study the aim was to select the financial ratios that can be used when constructing the credit risk model for Lithuanian companies in the Construction ir Transport & storage sectors. In the research 500 companies whose bankruptcy processes were initiated in 2009-2013 and 475 successfully operating companies at that time were analysed. Financial ratios which as early as possible before bankruptcy indicate the financial problems in companies were selected.

In Lithuania small and medium sized companies are predominant; therefore they have fewer requirements for financial statements. For this reason it is not possible to calculate cash flow ratios, financial ratios of expenditure level and others for such companies. Having evaluated these limitations, 53 ratios were investigated in the research.

24 financial ratios which statistically significantly differ in the financial statements bankruptcy and non-bankruptcy companies 3 year before bankruptcy were distinguished. Among the groups of these companies liquidity (8 ratios) and solvency (5 ratios), constructed in different section, were mostly statistically different. Therefore, in further research it would be appropriate to consider the possibility to reduce such ratios in the credit risk model. Also, the selected ratios of operational efficiency (4 ratios), profitability (3 ratios), asset structure (3 ratios) and the level of expenditure might be included into the credit risk model.

The research has shown that certain specific ratios can statistically significantly differ in the financial statements of the bankruptcy and non-bankruptcy companies in a certain sector. Therefore in further research it is appropriate to examine other sectors of economic activity.

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The Long Term Regulation Model as the tool in SME Energy Enterprise value management – initial research results presentation

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Abstract

The objective of the article is presenting initial results of the research focused on the development of an arithmetic model for energy regulation purposes in the form of an empirical instrument that can be used for tariffing the energy production by SME and as a value creation tool for SME energy providers.

Methodology covers review of world-wide literature and studies based on sources of power industry. Author is carrying out questionnaire surveys on a sample of SME sector power companies pursuing concession activities in energy industries in UE and questionnaire surveys carried out among Regulators from European power markets and global markets.

The research contribute to the development of the theory of tariffing through the development of empirical measures to limit the negative impact of state intervention in sector of SME energy companies operating in the regulated market and the development of the use of econometric models in the process of enterprise value creation. The model will also contribute to the development of tools catalogue under the concept of SME VBM.

The regulation processes for the SME energy segment should be based on empirical fundamentals to stimulate their effectiveness that leads to price reductions. There are some symptoms for the proliferation of empirical instruments in both science and economic practice in the form of econometric models used for regulatory purposes in tariffing procedures for energy business.

The Model will represent an empirical approach to the task of negotiation of the regulated income for SME energy providers. The Model in its instrumental and methodological dimension will be designed based on best practices on the global energy markets and will contribute to design the VBM tools for SME value development. Implementation results of the research can be a pioneering approach to the creation of the empirical basis for the process of tariffing.

Keywords: regulatory process in energy, tariffing, arithmetic models, SME energy providers, VBM

JEL Classification: G390, G380, C58, C51

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Introduction

The main objective of the article is presenting initial results of the research focused on the development of an arithmetic model for energy regulation purposes, in the form of an empirical instrument that can be used for tariffing the energy consumption in the SME sector and as a value creation tool for SME energy providers. The resulting model will represent an empirical approach to the task of administrative negotiation of the regulated income for energy providers, as a compromise between the recipients' price preferences and the suppliers' (distributors') rate of return preferences related to the expected return on invested capital at the level surpassing that of the average capital cost in Poland. The resulting model, both in its instrumental (econometric) and methodological dimension (the methodology of its application for tariffing purposes) will be designed from the ground up, based on selected best practices in the field, as employed for similar purposes on the energy markets of the EU and the world.

Indirect objectives of the research include:

- determination of regulative solutions targeted for the SME sector, as adopted on energy markets in the EU and in other developed energy markets of the world,
- determination of regulative solutions adopted in Polish sectors of electrical power engineering, heat engineering and gas engineering,
- the establishing of regulative solutions (accepted by Regulatory Offices) that may be employed for the SME sector in relation to solutions adopted elsewhere,
- evaluation of the significance of cooperation between SME energy recipients upon the tariff prices (preferred cooperation forms, directions of influence, manifestations of influence).

In Poland at present, there are no Regulator-approved tariff negotiation solutions based on econometric models to address the SME sector and even to state-owned companies quoted on the Warsaw Stock Exchange (main sector in Polish energy business), particularly with respect to the principles of calculating the operating expenditures of licensed activities (OPEX), regulatory asset valuation or the weighted average cost of capital (WACC). The need for an empirical approach in the calculation of regulated income in Polish energy sector was first observed in the sectors of electrical power engineering and gas engineering. The Polish electrical power distribution sector was subject to a three-year regulation period, initiated on January 1 2008 (Zaleski 2010). In 2009, the regulations were in force for 14 Distribution System Operators; those entities were formally obliged to submit their tariff proposals based on a pre-established methodology. The electrical power sector in Poland is being regulated on the basis of the retail price index (RPI-X). In the years 2008-2009, the regulated income for electrical power distribution was calculated as a sum of operating expenditures of licensed activities and the associated cost of capital. In the case of the gas engineering sector, the pending Long-Term Regulation Model (Długoterminowy Model Regulacji - DMR), based on an econometric model, was used for the six Gas Distribution System Operators affiliated with the PGNiG S.A capital group. The model was intended to stay in force for the period of three consecutive annual tariff years of 2012 -2014. In 2012, it was temporarily put on suspension, and, later on (in 2013), set aside, as a result of consolidation processes in the sector of gas distribution (Węgrzyn 2013).

The main premise behind the design of the DMR model was the negative evaluation of the sector's profitability and economic added value. The evaluation was done by the owner (indirectly: the State Treasury), as the gas distribution sector was an element of the public capital group quoted on the Warsaw Stock Exchange. The analysis in question identified a number of negative factors to influence the performance of individual gas engineering companies, namely (Węgrzyn 2013):

- no potential for including the full return on invested capital in the regulated income (the so-called RoIC gap),
- the lack of potential to include the full depreciation rate value in the regulated income (the so-called amortisation gap),
- the lack of capacity to include the full value of operating expenditures in the regulated income (the so-called operating expenditure gap).

In the light of the above, the Regulator decided to introduce measures intended to optimize the operating expenditures of the distribution segment, with particular focus on the inclusion of those costs which had been deemed unsubstantiated by the Regulator for the purpose of the tariffing process. In addition, the Regulator intended to increase the income level by negotiating individual tariff rates to cover the real value of operating expenditures related to the licensed activities and to ensure proper allocation of return on capital among the applicable energy sector companies. Previous to that, the regulation principles applied to the gas distribution sector in Poland had been quite volatile, both in terms of its main assumptions and the methods used in the calculation of the distribution tariffs, resulting in considerable uncertainty on the part of individual companies, since there was no way to forecast the future tariff rates approved by the Regulator for the next tariff period. This had also had a negative effect on the companies' financial performance, since the Regulator offered no warranties of full return on invested capital and repeatedly questioned the eligibility of certain cost items on the list of the operating expenditures related to the licensed activities.

Such a short-sighted approach to tariff regulation has also contrasted with the best practices used by regulators in other EU Member States. The new regulation model for gas engineering companies required changes in the regulation principles in three fundamental areas, namely:

- regulation periods for companies,
- regulation of eligible rates of return on capital,
- regulation of eligible rates of operating expenditures.

With respect to the length of the regulation periods, it was necessary to design a range of assumptions and parameters which would be in force for the whole duration of the regulation period. With respect to the RoC rate regulations, the Regulator had to design a method for establishing fair values of invested capital and specify the methodology for calculation of the weighted average cost of capital (WACC). With respect to setting the range of eligible operating expenditure rates, it was necessary to provide an objective classification of dependent and independent costs, in order to provide a properly diversified structure of the regulation methods. In the latter aspect, the most important task was to establish base (input) level of dependent operating expenditures (OPEX₀), to form a basis for setting (indexing) the costs for the following years of the regulation period. Other important elements included establishing a methodology of operating expenditure indexation and designing the applicable indexing indicators. The most important result of the DMR research comes in the form of a calculation sheet representing the econometric regulatory model for gas companies, to support the process of estimating the regulated income for individual entities (Wegrzyn 2013).

For both sectors, i.e. electrical power and gas industry, the postulated solution applied solely to large state-owned companies operating under natural monopoly conditions. For the remaining actors, particularly the SMEs, the tariffing process is still arbitrary (non-empirical), due to the lack of proper methodological approach on the part of the Regulator, with no empirical instruments to support the tariffing process in this segment.

On the demand side of the equation, the numerous forms of company cooperation are well-represented in professional literature. However, the research finding on the benefits of such cooperation are rarely substantiated by examples. It seems that this particular area – the cooperation between SMEs and its effects on tariff pricing – is under-represented in scientific research.

The regulation principles in the sector of energy production and distribution in Poland over the last few years have been quite volatile, both in their fundamental assumptions and the structure of variables used for tariff calculation purposes. This had the effect of elevating the uncertainty level for energy companies, due to difficulties in forecasting the prices for the next tariffing year. Their financial performance also suffered, since the Regulator offered no warranties of full return on the invested capital and repeatedly questioned the eligibility of certain cost items on the list of the operating expenditures related to the licensed activities. Such a short-sighted approach to tariff regulation has also been in contrast with the best practices used by regulators in other EU member States. This problem is particularly evident in SME sector companies, which are often unable to carry the cost of external consultancy or professional tariffing teams, and reduced to strict observance of administrative decisions imposed by the Regulator, which has the effect of constraining their development opportunities. In the light of the above, it seems advisable to design empirical fundamentals of the tariffing process for the SME segment of the energy sector, based on econometric models, and utilizing some of the best practices observed in the industry, both in domestic electrical power and gas engineering sectors, and the more developed energy markets of Europe and of the world. This approach may contribute to the formation of a predictable environment for tariff negotiations between individual companies and the Regulator, by formulating an empirical fundament for pricing purposes and by alleviating the burden of uncertainty for the involved actors.

From the research perspective, very interesting aspect is the impact of the SME sector on the pricing of tariffs for the whole industry. In recent years, there has been a marked increase of research reports in the area of cooperation between companies, particularly those operating in cluster formations. Another important element of the regulated market of energy is the impact of individual contracting parties on the pricing decisions. In this context, the research on impact of small entities with relatively limited volume seems justified, since those entities cannot possibly influence the pricing decisions by themselves. The central problem here is the cooperation between small entities (the pros and cons), its forms, directions and operating methods. Another aspect deserving attention can be expressed in the following form: do the entities involved in various cooperation forms seek to influence the pricing decisions and, if so, what types of activities do they employ to that effect.

The novelty of the postulated approach can be justified by the fact that it represents an attempt at formulating an empirical instrument that can be used as platform for tariff negotiations conducted annually by state authorities, represented by the office of the Regulator, with the SME segment of energy companies. In methodological terms, the pioneering nature of the research is substantiated by the use of the best practices benchmarking method, based on the existing solutions employed on mature energy markets of Europe and the world, to complement the design of econometric models for tariffing purposes in the energy sector. The unique character of the postulated research lies also in the attempt at producing a scientific solution for state administration and business entities, to enhance the empirical fundamentals of the process instead of resorting to the largely arbitrary administrative decisions imposed by the state-appointed executive bodies.

The pioneering character of the project is also observed in the intent of the research team to address the needs of a specific segment of the market, namely the small and medium-sized enterprises operating on the regulated market of energy, under the competitive pressure from large, multi-utility energy conglomerates benefitting from natural monopoly.

Another pioneering aspect of the research is focused on inclusion of SME actors in the negotiation of tariffs for the SME segment, represented by coordinators appointed by individual groups of cooperating entities (Porter 2000) (Asheim and Coenen 2006) (Golej 2012).

Results of empirical studies are the development of tariff negotiation strategies in Poland and elsewhere, since empirical instruments have the potential of reducing the extent of state interventionism in the sector, particularly the highly susceptible segment of SMEs operating on regulated markets. The results of empirical research will contribute to the development of econometric models for business, particularly with respect to value creation in the segment. The resulting empirical econometric model will also broaden the range of applicable Value Based Management instruments that can be used in the design of development strategies for small and medium-sized enterprises of the energy sector. The research also offer utility value, by offering a pioneering approach to the design of empirical fundaments for tariff negotiations, as well as value creation for individual companies (and not limited to the SME segment). Another utility value is the potential range of benefits offered to SME actors through their involvement in the price negotiation processes. In addition, the study of cooperation as a factor involved in price negotiations also contribute to the development of cooperation strategies in other areas and in other sectors of the economy.

1 Materials and Methods

Presented empirical research is conducted with the application of the following methods: relevant Polish and world-wide literature review and review of relevant studies based on corporate sources of power companies, industry organisations (e.g. Chambers of Commerce), materials of Energy Regulatory Offices, Ministry of Economy and Treasury of the Republic of Poland, reports of consulting companies, publicised materials prepared by the European Commission and UE Parliament. Author plans to carry out questionnaire surveys on a sample of SME sector power companies pursuing concession activities in electrical power, heat generation and gas distribution industries in Poland and questionnaire surveys carried out among Regulators from European power markets and developed global markets. Analysis of survey data based on statistical data processing applications will be next important issues. Investigator plans to review of econometric models used in the power industry in Poland and all over the world, study visits and practical observation of the econometric models used in the power industry for tariffication purposes. The practical result of the research will be development of an econometric model for power companies with the use of professional IT tools available on the market based on good practices applicable all over the world. If, in the course of the research, the differences in the specificity of individual groups of examined enterprises prove to be too big, which is highly probable, thus preventing unification, i.e. for instance, the differences between a heat network transmission company and an electrical power generation and distribution company will regard e.g. core processes (with regard to their specificity and hence cost-generation), the econometric model will be developed for every examined group, i.e. for the group of combined heat and power generation, electric power, and gas power generation companies separately, and also by generation, distribution as well as generation and distribution companies.

2 Results of initial research

The need for an empirical approach to the process of regulating the licensed activities in the sector of energy is quite pronounced at present. In particular, econometric models may be employed to enhance the empirical character of regulatory instruments for the SME segment of the sector under study. The fundamental elements of the value creation process for energy companies should be based on empirical models, such as the Regulator-approved econometric models. So far, the regulation process in the sector of energy in Poland has principally been based on administrative decisions, devoid of the empirical dimension. Initial research analyses allowed to determine the existing best regulatory practices adopted in other countries of the EU region. The best practices were found to provide a good balance of interests for both parties of the market exchange, i.e. the customers and the companies of the energy sector. Best practices identified in the course of initial research include:

- prolonged regulatory periods for energy companies, to increase the predictability of the Regulator's activities and ensure their invariability over a given period,
- the use of motivational (incentive) regulation methods for energy companies, designed to improve the operating effectiveness (e.g. by creating incentives for the reduction of costs associated with the licensed activities),
- setting clear and predictable rules for determination of allowable levels of operating expenditures for the subsequent tariff periods, based on transparent indexing formulas (typically, the RPI-X formula, with X representing a compilation of different variables that determine the expenditure level of networked companies, such as cost optimization indexes, scale of operation indexes, and others),

- inclusion of activities related to the introduction of new technologies in the list of allowable operating costs, for example: energy saving solutions, energy use monitoring, effective infrastructure management (smart metering, etc.).

The key conclusions obtained in the course of initial research are unambiguous: the regulation processes for the companies of the energy sector – particularly the most susceptible companies of the SME segment – should be based on clear and transparent fundamentals, to allow the companies make informed and rational decisions and to stimulate their effective operation that leads to price reductions per unit. The most important aspect in the rational approach to regulatory processes in the industry is to provide the relative long-term stability of the regulatory environment, in order to reduce the investment risks and improve the stability and security of energy infrastructure. For this purpose, it seems advisable to introduce prolonged regulatory periods (3-5 years), with relatively unchanged regulatory principles.

There are some symptoms for the proliferation of empirical instruments in both Polish science and economic practice, in the form of econometric models used for regulatory purposes in tariffing procedures for electrical power, heat engineering and gas engineering segments (Osiewalski and Wróbel-Rotter 2002) (Węgrzyn 2013). In the course of regulatory proceedings for the year 2008, the Polish Regulator introduced and communicated to the electrical power Distribution Systems Operators a list of allowable operating expenditures for the period of 2008-2010, calculated on the basis of an econometric model designed by professor Jacek Osiewalski and his team at Cracow University of Economics (Osiewalski and Wróbel-Rotter 2012). In the case of gas engineering, the Long-Term Regulatory Model was designed on the initiative of the Polish Board of Gas Engineering, based on an econometric model for the 6 Distribution System Operators affiliated with the PGNiG S.A Capital Group. The model was intended to stay in force for the period of three consecutive annual tariff years of 2012 -2014. In 2012, it was temporarily put on suspension, and, later on (in 2013), set aside, as a result of consolidation processes in the sector of gas distribution. Consequently, it still remains in the sphere of theoretical models.

For both sectors, i.e. electrical power and gas industry, the postulated solution applied solely to large state-owned companies operating under natural monopoly conditions. For the remaining actors, particularly the SMEs, the tariffing process is still arbitrary (non-empirical), due to the lack of proper methodological approach on the part of the Regulator, with no empirical instruments to support the tariffing process in this segment. The subject is also largely under-represented in domestic professional literature.

The initial research allowed to determine the concept for a regulatory model for the SME segment. Under the adopted assumptions, the Model shall comprise of two elements (sub-models) (Węgrzyn 2013). The first sub-model is a benchmarking² model (for cost-effectiveness assessment), based on historical expenditures, asset information, and cost intensiveness indicators, to allow for comparison of the cost-effectiveness across the segment and the determination of individual cost-effectiveness indicators for companies under study. The second element – the regulated revenue forecast sub-model – shall be employed for the purpose of forecasting costs, return on invested capital, the regulated revenue and the mean average pricing for the subsequent years of the forecast, adjusted against the benchmarking sub-model data.

2.1 Benchmarking sub-model

The benchmarking sub-model will serve the purpose of assessing cost-effectiveness of the enterprises covered by the examination and is aimed at comparing the historical effectiveness of the enterprises as well as at determining the potential cost-effectiveness gap to be reduced in the future tariff years.

The historical effectiveness of enterprises will be compared through:

- analysis of historical dependent operating expenditures of a concession activity (without amortization, taxes and fees, and balance sheet difference),
- analysis of key parameters which determine the behaviour of dependent expenditures of enterprises,
- calculation of metrics for cost-effectiveness assessment for each of the enterprises carried out based on historical expenditures by areas and parameters assigned to the areas.

The potential cost-effectiveness gap reduction in the future years will be determined through:

- calculation of the gap in a given cost area relative to the adopted reference level, which will be carried out on the basis of effectiveness metrics assigned to a given area and metric weights in the area,
- calculation of the cost gap at the level of a given enterprise, which will be carried out on the basis of effectiveness gaps in individual areas and area weights within the enterprise.

The benchmarking cost-effectiveness assessment sub-model will be supplied by three groups of data: cost data, operational data, and weights.

Cost data will comprise dependent operating expenditures of a concession activity by individual groups (as part of unification, the following are suggested provisionally):

² The benchmarking methodology has been presented comprehensively in the first polish manual on benchmarking written by Adam Aleksander Węgrzyn (Węgrzyn 2000)

- infrastructural equipment operation (a specific division will depend on the specificity of a given group of examined enterprises),
- commercial consumer service,
- energy flow management (depending on the group of examined enterprises – electrical, heat, gas fuel energy),
- ancillary activities.

For verification purposes, expenditures related to the area of the so-called non-concession activities, and the value of independent operating expenditures (amortization, taxes and fees, and balance sheet difference) will also be included within the model.

Operational data will include key parameters regarding operating activities of enterprises, which will constitute cost-effectiveness assessment parameters in individual areas of the activity (the so-called drivers) within the model. They will comprise major parameters (e.g. length of the power grid, number of infrastructural facilities, such as transformer substations, heat generation facilities, gas pressure reducing stations, number of consumers, volume of the transmitted energy) coupled with sub-parameters and their cost-absorption ratios. The data regarding weights will include, in turn, weights of individual cost metrics and weights of operating activity areas. Metrics for cost-effectiveness assessment of enterprises will be calculated based on adjusted parameter values (e.g. adjusted length of the power grid), since parameters being cost drivers in various enterprises are diverse in many aspects (e.g. the length of the grid can be diversified in terms of the material used, age of the grid, terrain conditions of the power grid location).

The so-called adjustment factors, which reflect the fact that given sub-parameters within a given parameter (e.g. length of the network by medium and low pressure in the case of gas transmission networks) are characterised by different cost-absorption, will serve the purpose of calculating the adjusted parameter values. For example, the calculation of an adjusted parameter of the length of the power grid could be as follows:

Adjusted length of the grid = Nominal length of the grid × Adjustment factor regarding the age of the grid × Adjustment factor regarding the grid material × Adjustment factor regarding the grid location

Adjustment factors within a given sub-group, in turn, can be calculated by determining the cost-absorption of individual sub-parameters making up a given parameter. It will be determined empirically (with the assumption that the sub-parameter with the lowest cost-absorption within a given group will be assigned ratio 1, while in the case of other sub-parameters the cost-absorption ratio is calculated as a relation of unit cost-absorption of this parameter to the parameter with the lowest cost-absorption) for individual examined enterprises and it will be used as average values in the model. An example calculation of adjustment factors based on a group of sub-parameters of grid voltage for electrical power companies is as follows:

Adjustment factor regarding grid voltage = Share of the high voltage grid in the total length of the grid (%) × Cost-absorption ratio for the high voltage grid + Share of the low voltage grid in the total length of the grid (%) × Cost-absorption ratio for the low voltage grid

Metrics will be defined in the benchmarking model and then assigned to the identified cost areas. If, in the course of the research, the differences in the specificity of individual groups of enterprises prove to be too big, thus preventing unification, i.e. for instance, between a gas distribution network company and a heat distribution network company, cost areas will be determined for every examined group individually.

Metrics for cost-effectiveness assessment will be calculated as a relation of the cost value of a given area of activity to the adjusted parameter value (e.g. cost of the area infrastructural equipment operation / adjusted length of the grid).

The point of reference for thus calculated metrics will be the median value of a given metric calculated for all examined enterprises in a given year. Therefore, the cost-effectiveness gap is the difference between the medial value of all metrics and the metric value for a given enterprise.

Only negative deviations from the median will be taken into account in the process of determining the effectiveness gap since the primary objective of the cost-effectiveness assessment model is to identify only such areas in which enterprises disclose effectiveness at a level lower than the median.

Where more than one metric for effectiveness assessment (e.g. the cost of infrastructural equipment operation / grid km) is calculated within a given cost area, the calculated effectiveness gaps (deviations) will be “weighed” at the level of individual metrics. Metric weights within areas, which will be determined as average values on the basis of the weights determined for the examined enterprises, will be used for this purpose.

The final stage in the effectiveness assessment process will consist in determining cost-effectiveness gaps (deviations) at the level of individual enterprises, i.e. with all cost areas that are included in the model taken into consideration. The previously calculated effectiveness gaps at the level of individual areas and area weights in individual enterprises will be applied for this purpose. Hence, the total effectiveness gap of a given enterprise will be the sum of products of its effectiveness gaps at the level of areas and the corresponding weights. Area weights will be calculated based on the share of costs of a given area in the total costs of all areas.

To sum up, the total effectiveness gap will be the average of the gaps determined for the analysed years and will operate in the regulated revenue forecast model as X ratio, that is the cost-effectiveness ratio.

3.2 Regulated revenue forecast sub-model

The regulatory Model being developed is aimed at estimating and analysing regulated revenue components by individual examined years, in particular return on the committed capital, dependent operating expenditures, and costs of amortisation/depreciation, taxes and balance sheet difference, as well as estimating average regulated prices for the successive examined years based on the forecast of volume and of regulated revenue. The rates will be for reference only and serve as the basis for negotiations with the Regulator.

General assumptions of the Model will include:

- inflation forecast,
- planned dependent operating expenditures optimisation path – X ratio,
- planned activity scale change path – Y ratio,
- various variants of achieving the full return on the committed capital.

The Model will also use the source data regarding concession activities obtained from the individual examined enterprises:

- dependent operating expenditures – executed in year n (e.g. 2014), which constitute the cost basis for further forecast periods (the so-called $OPEX_0$),
- amortisation/depreciation cost forecast as well as tax and fee cost forecast,
- balance sheet value of property, plant and equipment and net intangible assets as at the end of year n , which serves the purpose of determining the Regulatory Asset Base (RAB),
- forecast capital expenditures,
- forecast energy supply volume,
- forecast operational data serving the purpose of determining the planned activity scale change.

Regulated revenue will be calculated by: return on the committed capital, dependent operating expenditures, amortisation/depreciation, taxes and fees.

An example dependent operating expenditures forecast is presented below. Dependent operating expenditures, including costs of outsourced services, materials and energy, remunerations, performances for employees, and other costs by type, will be forecast based on the initial level of such costs (the so-called $OPEX_0$), that is executing dependent operating expenditures of year n . Dependent operating expenditures will be indexed within the assumed regulation period according to the Formula 1:

$$OPEX_n = OPEX_{n-1} \times [1 + (RPI_n + X_n + Y_n)] \quad (1)$$

where: $OPEX_n$ = dependent operating expenditures, $OPEX_{n-1}$ = dependent operating expenditures recognized for tariff calculation in the previous tariff year, RPI_n = annual average increase in prices of consumer goods and services determined on the basis of the assumptions adopted by the Council of Ministers for the purpose of preparing a draft State budget for a given year, X_n = individual cost-effectiveness ratio, Y_n = activity scale change ratio of individual enterprises.

Tax and fee as well as amortisation/depreciation costs will be forecast based on schedules of costs prepared by the individual independent enterprises.

The return on the committed capital based on initial examination of good regulatory practices on developed power markets, in turn, will be forecast based on the variant in which return on capital is an element closing forecasts of other regulated revenue components with the simultaneous assumed maximum regulated revenue increment. The above assumption is illustrated by the Formula 2:

$$R = RR - (OPEX + A + T) \quad (2)$$

where: R = return on the committed capital, RR = regulated revenue for a given year, $OPEX$ = dependent operating expenditures, A = amortization/depreciation, T = taxes and fees.

Conclusion

The results of initial, empirical research presented in article are of particular importance for the development of the theory of tariffing around the world through the development of empirical measures to limit the negative impact of state intervention in the development of the sector, which is particularly sensitive sector of SME energy companies operating in the regulated market. The test results also contribute to the development of the use of econometric models in business especially in the process of enterprise value creation.

Developed by empirical research econometric model will also contribute to the development of tools catalogue under the concept of Value Based Management that can be used in the design of the development of SME (more in Michalski 2014). Implementation results of the research is a pioneering approach to the creation of the empirical basis for the process of tariffs. The nature of research is also driven by utilitarian benefits that they can get through the SME entrepreneurs the opportunity to influence the price. The ability to exert influence through the mechanism of cooperation, it can also be a contribution to the further cooperation of enterprises in other areas.

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Empirical research of success innovation projects due to the sectoral specifics in Czech companies

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Abstract

Purpose of the article This article represents a study examining the structure and properties of enterprises with respect to the success of innovation projects (IP) in the Czech Republic. It is because through IP is increasing competitiveness of Czech companies. Attention focuses mainly on implementation phase (exploitation/completion of the project) of a new or significantly improved product, process, organizational or marketing method. The reason is that most IP fail, whether it is the firm, project, product or market related factors among others.

Methodology/methods The empirical evidence is based on a quantitative data gathered through an email questionnaire which yielded 194 qualified responses. The major analytic procedure applied within this research comprises methods of correspondence analysis and validation technique based on chi-square nonparametric tests for testing dependence of selected variables. The procedure correspondence analysis is used performed by IBM SPSS 22 which includes the calculation of the singular values, inertia and quality display. For transparent representation of the structure of dependence and interpretation is used symmetric correspondence map.

Scientific aim The objective of this study is to answer a research questions: How many IP succeds, how many fail due to the sectoral specifics in Czech companies? What are the differences between IP that succeed and those that fail? What are the factors that lead to failure in the projects examined in this empirical research?

Findings Empirical evidence suggests that only 17% of the IP (regardless of sector) can be considered completely successful. More than 80 percent of all IP failed, either completely or partly. The research confirmed statistically significant differences in the success of IP due to the sector specifics. Among the most succssefull include growing sector of wine-makers, manufacturing sector (mainly engineering) and service sector (trade and scientific-technical activities) have the highest share of successfully realized projects. The factors of failed IP come from technological and economic point of view in particular.

Conclusions Definition of successful project is depended on point of view of project management and innovation management literature. Percentage of project success may have informative value, but there is necessary to know other factors, which impact final success. Among the most important factors could be add (1) geographical location (only Czech Republic), (2) focusing on whole industry, (3) complexity of projects, (4) scale of projects.

Keywords: innovation, project management, industry, success

JEL Classification: M15, M21

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Introduction

Public policy is increasingly concerned about promoting innovation in order to stimulate economic growth, employment and ecological sustainability (Kleinknecht, Montfort, Brouwer, 2002). It has become common place to argue that in the contemporary “knowledge-based economy” characterized by both accelerating pace of change and increasing complexity and uncertainty, the ability of firms to adapt in their external environment and to remain competitive is closely related to their capacity to innovate and continuously upgrade and renew their knowledge bases, products and structures (Varis, Littunen, 2010; Žižlavský, 2013). The reason is that the ability to innovate is increasingly viewed most important factor in developing and sustaining competitive advantage (Tidd et al, 2007). This issue is well emphasized both domestic and foreign literature (Pitra, 2006; Košturiak, Chál, 2008; Hamel, Green, 2007; Tidd et al., 2007).

Implementation of innovation should take place through project management, as well as any major change in the company. According to Dvořák et al. (2006b), the process of learning, which is a prerequisite for process improvement is never ending process. This issue is related project management innovation allowing for promoting desirable changes. This system of management has limited understanding and use in the Czech Republic. However, combining systematic innovation and project management, as management enforcing changes could minimize deployment failure innovation.

In this research paper, the term innovation is the implementation of a new or significantly improved product, process, organizational or marketing method (following definition OECD/Eurostat, 2005). Innovation is not just a realization of an idea (invention), but they are all activities that must be done from this idea to the application of innovative products or processes into the target market or groups, or the implementation of organizational changes in the company as part of corporate strategy – exploitation (implementation phase). According to Cozijnsen et al. (2000) the implementation phase, receives relatively little attention. One reason why the implementation phase has received so little attention is that it proves very difficult to establish a success measure for implementation. The level of analysis, unlike the other perspectives, is the innovation project itself. If, in the implementation phase, one wants to find factors that influence successful innovation, the success measure will have to relate to the results (output) of the innovation project.

The cross-sectional research study of 50 Dutch companies by Cozijnsen et al. (2000) concluded that a little more than half of the innovation projects can be considered completely or at least partly successful. However, more than 39 per cent of the innovation projects failed, either completely or partly. Of the differences in innovation success of organizational innovations, 61 percent can be explained by the implementation factors time management, cost management, information management, decision making and resistance to leadership. Both the factor cost management and resistance to leadership explain the differences in innovation success of organizational innovations.

If innovations are to be successful, it must be a systematic activity and not random and all operations performed in the innovation process applied. Another very important condition is the fact that assumes that each intended innovation is essentially a project and they should apply the principles derived from project management whether it is a product, process innovation or others. However, in practice the successful conclusion of a total innovation project is by no means matter-of-course, and many innovations even end in failure (Cozijnsen et al. 2000, p. 150). In recent decades much research has been done to discover in which way the “ideal” innovation project should be carried out. The related research questions are:

- 1) How many innovation projects succeed, how many fail due to the sectoral specifics?
- 2) What are the differences between innovation projects that succeed and those that fail?
- 3) What are the factors that lead to failure in the projects examined in this empirical research?

The paper is organized as follows. Section 1 provides an overview of theoretical and empirical arguments regarding the success innovation project and factors of innovation project failures. Section 2 describes the data and explains the methods used. Finally section 3 provides the empirical results and their discussion.

1 Theoretical background

Currently there is a huge body of the literature and empirical studies engaging with success or failure of innovations (Cozijnsen et al. 2000, Van der Panne et al., 2003, Dvořák, 2005; Tidd et al., 2007, Thomaschewski, Tarlatt, 2010, Žižlavský, 2014). For example Van der Panne et al. (2003) in their review based on SAPHO-study, followed by Cooper's study Project NewProd and Maidique and Zirger's Stanford Innovation Project identified four major headings: (1) Firm related factors; (2) Project related factors; (3) Product related factors; (4) Market related factors.

In more recent studies **Henard and Szymanski (2001)** or Thomaschewski and Tarlatt (2010), based on such factors as the most successful innovations (Žižlavský, 2014):

- Product features - superiority over competing products;
- Regulations innovation capacity and resources;
- Strategic factors - technological potential and marketing synergies;

- Marketing factors - orientation to the market and customers;
- Process properties;
- The characteristics of the market;
- Personal motivators.

Tidd et al., (2007) argue that successful innovation strongly correlates with how the company selects and manages projects to coordinate inputs from its various functional sections as connecting with customers. They suggest that successful innovation management is associated with the ability to create an integrated set of routines, which is then the basis for competitive advantage taxation of business. However, almost authors arguing that success is the outcome of a wide range of firm and project related factors; a single magical factor does not exist (Van der Panne et al., 2003). There are no success or failure factors that have an unambiguous influence on the success of all types of innovation projects. The success and failure factors differ per innovation type (Cozijnsen et al. 2000).

1.1 Project life cycle

Project management is a well-regulated field with established standards and effective practices; so innovation is certainly not the first concept that springs to mind when mentioning project management (Ivan, Despa, 2014). The project is unique and unrepeatable process that is inherently difficult and complex, encompassing elements of uncertainty and risk (Dvořák, 2006). Sometimes also be said of the project is a process of change from the initial state to the state of the target, which has a beginning and an end and other limitations (Doležal et al., 2012).

Project management can be defined as a way of managing complex, scheduled tasks with a high degree of uncertainty and high complexity, requiring different management activities, but it can be easily organized into structures such as process. There are different opinions on the composition and naming of individual processes (Dvořák, 2006; Rosenau, 2000; Svozilová 2006; Doležal et al., 2012; Kolečák, Smolíková, 2013). In general, there is consensus that it can be divided into the following five phases of the projects:

1. Start of the project
2. The project proposal
3. Project Planning
4. Implementation and Control Project
5. Completion of the project

These processes can be in terms of time, which is a key parameter and the criterion of success of the project, organize or classify into group of consecutive phases expressing the course of project development. The phases are logically related activities needed to make the project life cycle (Doležal et al., 2012). The life cycle can vary from project to project. In various industries and fields appear specific models cycles. Even though it is possible some basic stages which every project, regardless of their orientation, to generalize. Contemporary literature (Němec, 2002; Kavan 2007; Doležal et al., 2012) divides the project into several major and important project phases:

- pre-project phase,
- project phase,
- post-project phase.

In the *pre-project phase* are designed to explore opportunities to design and assess the feasibility of the project. Sometimes this phase also included the vision, the basic idea that a project could be realized. Considering whether the idea of the project is viable and that after him there was a demand. If the studies performed confirm the existence of opportunities for the project, considering the manner of its execution.

Project phase includes the realization of the project from the start, through detailed planning, following the implementation itself. At the end of this phase is an ideal project is completed, the customer handed over everything that was promised goal of the project is realized.

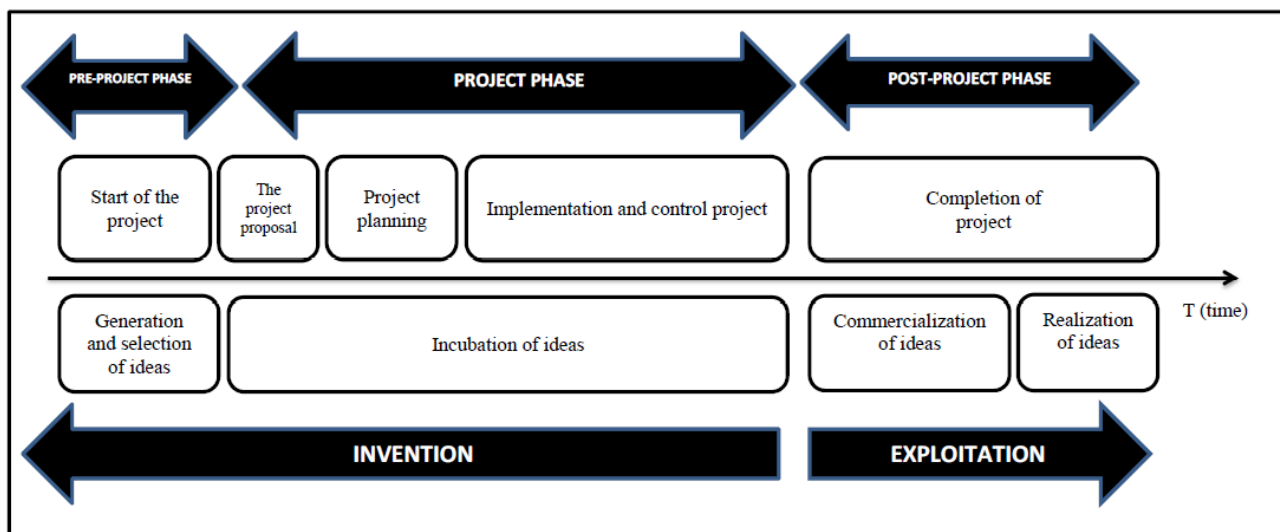
Post-project phase occurs after the surrender of all outputs and project completion. It includes an analysis of the project completion and evaluation, whether it was successful or not. It includes also the project design, as the light of experience to improve the next project. This includes the maintenance of the project outputs in normal service organization, sometimes referred to as the evaluation phase and operation.

1.2 Process view of innovation

The basic model of the different stages of the innovation process is constant and common to all companies and organizations (Tidd et al., 2007; Thomaschewski, Tarlatt, 2010; Kirschner et al., 2004). A process view of innovation by Dewangan and Godse (2014) provides a generic view of the innovation lifecycle. For the research has been selected this innovation lifecycle because it has been generalized for all kinds of innovations including new product development

(NPD), new services development (NSD) and technology innovations among others. Invention implies conceiving and developing the idea into a work able application, whereas exploitation entails the process of commercialization and reaching the benefits. These authors view lifecycle perspective of innovation comprising of four broad phases:

1. **Generation and selection of ideas** can be considered as two stages within idea management where an idea is generated by an innovator and subsequently evaluated and selected by an enterprise innovation function for incubation (ideation, review and refinement, selection, investment analysis).
2. **Incubation of ideas** that is concerned with the process of transforming an idea into a fully developed and financially viable innovation application (technical feasibility, commercial viability, innovation development, business planning).
3. **Commercialization of ideas**, which involves caling up the innovation and formally introducing into the market and also includes brand building, market promotion and distribution activities.
4. **Realization of innovation**, which is concerned with the accrual of financial and non-financial benefits to the enterprise (steady state support, promotion and distribution, market feedback).



Source: own work

Figure 1 Relationship between project life cycle management and innovation lifecycle

The life cycle of the project and lifecycle management innovation must be consistent with each other and carried out at the same time. In practice, this means that the innovative project is implemented in two parallel levels. After the process when addressing individual parts of the innovation process and then evaluated for effectiveness, and for the life cycle management, where the use of five stages (project initiation, project design, project planning, implementation and control of the project, completion of the project) so to ensure compliance with all specified design parameters (Dvořák et al., 2006).

According to Cozijnsen et al. (2000) the implementation phase is often the most crucial phase and is also seen as the completion of a project, it is interesting to map the success and failure factors of this phase. The success measure, which we will address in more detail later, will therefore be based largely on the end results of such an innovation project.

1.3 Innovation project

According to Dvořák et al. (2006) the innovative project considers only one that implements change in the qualitative nature. Innovative projects are in practice regarded as the most complex projects ever. It should be understood that they have unique features and are vital for companies. Throughout the world, namely innovative projects ubiquitous activities extraordinary economic importance and tools and project management techniques are particularly useful for various types of projects in connection with the implementation of innovative projects arise. Innovative projects differ from other projects in the following points:

- project comply with the requirement of Triple Constraint (cost, time, quality),
- project include many different types of projects (except rationalization projects),
- they can not be described as fixed, rather flexible to semi-flexible (especially in R&D of new products).

- a high degree of uncertainty (especially with high innovation systems based on R&D in the early stages when it is not clear how it will take another solution, what options will be evaluated to see if there circumstances to stop the project, etc.).
- significant risk (is not just whether the project is completed, but especially in whether ever reaches the realized results).
- the composition of the various stages (starting with ideas, suggestions selection, R&D, testing, product launch or implementation).
- the allocation of costs and effects to a specific innovation project.

1.4 Success of innovative project

According to Doležal et al. (2012) project management success is due to the valuation of the project results by different stakeholders. It would seem that if the project meets the Triple Constraint (time, cost, quality), must to be successful. But the reality is somewhat more complicated because although the project meets the Triple Constraint condition, it turns out that the delivered solution is not applicable. As Kirschner et al., (2004) pointed out, project success is not innovation success.

There are two types of success, namely the success of the innovation project itself and the success of the innovation (its ultimate implementation). These two successes are completely different and neither is a requirement or guarantee for the other. Also, success of an innovation at the project level does not automatically generalize to success at the institutional level. The practice of project management therefore uses *Critical Success Criteria* for the project as a major scale. The main requirement is the intelligibility, clarity and measurability. Standardly are used three sets of criteria:

- criteria for project owners or the relevant companies,
- traditional criteria of the final operator (in time and specified costs),
- profit criteria of funders and suppliers.

Overview or elucidation of project success in terms of Critical success factors in projects can be found in review paper by Müller and Jugdev (2012) based on earlier work of Pinto, Slevin, and Prescott seminal contributions to the field in the 1980s. Success Criteria of the project could be also found in Dvořák (2006), based on the conclusions of the research report of Standish Group "Chaos Report 1995". The survey focused on software projects, therefore the area is relatively well-managed methodically and detection of critical factors that influence their success, which help to identify the causes of failures.

Table 1 Overall results of success projects

Type 1	The project was completed on time, the planned cost of all specified functions and features.	16.2%
Type 2	The project was completed and the result of use, but cost overruns, exceeding time and less functionality than the specified.	52.7%
Type 3	The project was abandoned in the course of implementation.	31.1%

Source: Dvořák, 2006, p. 137

However, how can innovation project results be quantified? Cozijnsen et al. (2000) defined innovation success as a function of achieved results on established objectives because it is impossible to check innovation results against an external success criterion. There simply is no success measure external to the innovating organization that is useful for organizational as well as technological and product innovations because the objectives of the different types of innovations are too diverse. To evaluate innovation projects, the objective of the innovation will therefore have to serve as the reference. The degree in which the goals $\pm$ as defined by the innovating organization itself $\pm$ are achieved. The most important result of a successful innovation project is the degree in which the defined goals have been achieved. It is necessary to quantify the results in terms of defined goals (Cozijnsen et al. 2000, p. 153).

To be able to measure the results of an innovation project objectively both the organizational and the human results must be included in the success measure (Vracking, Cozijnsen, 1992). Table 2 contains a selection of frequently named objectives of innovation projects.

Table 2 Quantifiable objectives and results of innovation projects

Organizational perspective	Human perspective
increased profits	reduction of staff turnover
increased turnover	increased employee satisfaction
increased efficiency	enhanced motivation of employees
improved effectiveness	improvement of work environment
higher productivity	
increased market share	
improved environment	
quality improvement	

Source: Cozijnsen, et al., 2000, p. 153

3 Materials and methods

Entire primary research focused on the evaluation of enterprises in the area of business and innovation activities in the Czech Republic. It was prepared as pilot research. The primary research was designed by a questionnaire survey, which included both open and close questions. Questionnaire was compiled on the basis of achieved theoretical knowledge, defined areas of solved problem and specific objectives in innovation projects. Individual questions were in focused on projects and innovations (both open and close). For the purpose of this article only one part, which was targeted on success projects in company, was chosen.

Presented paper is based on primary research by questionnaire survey, conducted in 2014 in the Czech companies. 527 companies were randomly selected to participate in this survey. Totally 157 questionnaires were returned (relative amount 29.79%). As the largest group of companies, which gave back questionnaire, was companies from manufacturing industry (44.1% of companies). The second group was group of services (34.6% of companies). Rest of groups are displayed in Table 3.

Table 3 Relative frequencies of respondents according to industry

<i>Industry</i>	<i>Relative frequency (%)</i>
Manufacturing	44.1
Services	34.6
Construction	10.1
Mining and energy	4.8
Transportation	3.2
Agriculture and forestry	2.1
Financial industry	1.1

Source: own work

To process the results of the questionnaire survey there were used both of descriptive statistics and correspond analysis. These methods were applied on the selected data set, which are involved on realisation of innovation projects in Czech companies. The data were processed by using the statistical program IBM SPSS Statistics 22. The conclusions provide characteristics of the limitations of our research and its potential further direction.

We need to describe a methodical approach to identifying successful innovation projects arise some important questions (rely on Dvořák, 2006): This paper is focused on innovative projects from the **organizational perspective (micro-level)**. It means aggregation of innovation on the product itself, generation of product, method or organizational change, product families. Every respondent from an organization included in the sample was asked to think of a recently completed innovation projects, and answer all the questions for these particular projects.

The attention focuses on **implementation phase** (exploitation/completion of the project) **as the final active phase in an innovation process** (Cozijnsen et al. 2000). The way in which the innovation is implemented during the process has a direct effect on the final results of innovation projects.

Whereas the other perspectives can design their success measures and criteria based on the results of (individuals in) the innovating organization, the success measure of the implementation activities will have to relate directly to the results of the innovation project. The success measure relate to the results (output) of the innovation project.

In most Czech companies, especially in SMEs and most from the sectors excluding manufacturing and construction firms largely dependent on project management as a total system aspects of integration in the implementation phase (Tidd et al., 2007) to accurately determine the proportion of successful completed projects were not available relevant data. We can find the same conclusions in Dvořák et al. (2006) that this system of management has limited understanding and use in the Czech Republic.

Therefore, this research use a **subjective and self-reporting measures of success criteria from organizational perspective**. We used the percentage distribution of the share of successfully implemented innovation projects. For purpose of the research quality there was proved Gaussian distribution of successful projects, if exist any extremes. There were no extremes found and therefore all data are acceptable.

We would like to use a relative data to industry standards, which should be termed as competitiveness criteria. However, like the authors Cozijnsen et al. (2000) it is not possible, because we have not found any comparable research that defined innovation success as achieved results on established objectives.

For purpose of the article by correspondence analysis method the data were processed. In the fact this method focuses on the multidimensional observations. Correspondence analysis describes relation between both two nominal variables in pivot table and individual categories. In pivot table there is category combination which should become significant or not. If any categories are similar or associated, there are located in graph near themselves. Correspondence analysis itself is focused on association rate, usually by Chi-square measure. There are nominal variables as input into correspondence analysis, and kind of premise, that there is no ordering between variables (McGarigal, Cushman, Stratford, 2000).

Correspondence analysis processes dimensional homogeneous data which consist only positive values or zeros. Chi-square range has become coefficient which excludes zeros, and help to define relations between rows and columns.

Calculation of correspondence analysis includes three steps (Řezanková, 2010):

1. Pivot table transformation into table with support of Pearson chi-square;
2. Individual value decompositions are applied into defined table, then there are calculated new values and new vectors;
3. New matrix operations serve as input to graph design.

Basis for two dimensional pivot tables is data matrix $n \times 2$, in which categorical variable A get r values ($a_1, a_2, \dots, a_r$) and categorical variable B get s values ($b_1, b_2, \dots, b_s$). Due to realised observation there is created table by two dimensional separations of both variables. In the table is used n_{ij} frequency, which represents intersect of both variables. This n_{ij} provides number of observations, where are both a_i and b_j . Except n_{ij} there are used marginal frequency n_{i+} , where row observation with a_i value are observed (similar approach is for n_{+j} in column).

In that table there are applied relative frequencies (Beh, 2010; Kudlats, Money, Hair, 2014):

$$\sum_{i=1}^r \sum_{j=1}^s p_{ij} = \sum_{i=1}^r p_{i+} = \sum_{j=1}^s p_{+j} = 1 \quad (1)$$

Set structure is described by contingent relative frequency $p_{j/i}$ in two possible ways:

1. from point of variable B view, if variable A reaches value a_i ;

$$p_{i/j} = \frac{n_{ij}}{n_{i+}} = \frac{p_{ij}}{p_{i+}} \quad (2)$$

2. from point of variable B view, if variable A reaches value a_j ;

$$p_{i/j} = \frac{n_{ij}}{n_{+j}} = \frac{p_{ij}}{p_{+j}} \quad (3)$$

Any changes in these values transform variable dependence, which is usually measured by Pearson chi-square test (Beh, 2008):

$$\chi^2 = \sum_{i=1}^r \sum_{j=1}^s \frac{\left(n_{ij} - \frac{n_{i+} \times n_{+j}}{n}\right)^2}{\frac{n_{i+} \times n_{+j}}{n}} = n \times \sum_{i=1}^r \sum_{j=1}^s \frac{(p_{ij} - p_{i+} \times p_{+j})^2}{p_{i+} \times p_{+j}} \quad (4)$$

After estimating the theoretical frequencies there is designed chi-square statistics. This statistic has chi-square distribution and number of degrees of freedom $(r-1)(s-1)$. On this basis, it is decided if exist dependency between variables in the population, and by using correspondence analysis is also possible to determine the structure of dependence.

4 Results

In own questionnaire survey there were questions on which individual respondents in companies had to answer from point of project and innovation view. Main aim was to find knowledge about the most innovative industry in the Czech Republic. Representativeness of the used population wasn't important because the survey was designed as pilot research.

At first step there were analysed absolute frequencies of individual industries in connection with successful projects' level, which are showed in Table 4.

Table 4 Pivot table of Successful projects and CZ-NACE groups

	<i>Till 25%</i>		<i>Till 50%</i>		<i>Till 75%</i>		<i>Till 100%</i>			
Mining and energy	0	0,00%	4	80,00%	1	20,00%	0	0,00%	5	100%
Manufacturing	25	33,78%	15	20,27%	20	27,03%	14	18,92%	74	100%
Construction	7	0,00%	2	13,33%	4	26,67%	2	13,33%	15	100%
Transportation	0	0,00%	1	25,00%	3	75,00%	0	0,00%	4	100%
Agriculture and forestry	1	25,00%	1	25,00%	0	0,00%	2	50,00%	4	100%
Financial industry	1	50,00%	1	50,00%	0	0,00%	0	0,00%	2	
Services	12	22,64%	18	33,96%	14	26,42%	9	16,98%	53	100%
Total	46	29,3%	42	26,75%	42	26,75%	27	17,2%	157	100%

Source: own work

Load indicators (Mass) in table 5 indicate load line which represents the percentage of information across the table in appropriate category. That loads are obtained as the ratios of the row and column marginal frequencies (n_{i+} , n_{+j}) in whole table of individual categories (n). The highest proportion of row variable line can be found at the second category, which represents manufacturers (0.471).

Empirical evidence suggests that only 17% of of the innovation projects (regardless of sector) can be considered completely successful. More than 80 percent of all innovation projects failed, either completely or partly. The research confirmed statistically significant differences in the success of innovative projects due to the sector specifics. Among the most succssefull include agriculture and forestry sector (mainly winemakers), manufacturing sector (mainly engineering) and service sector (trade and scientific-technical activities) have the highest share of successfully realized projects.

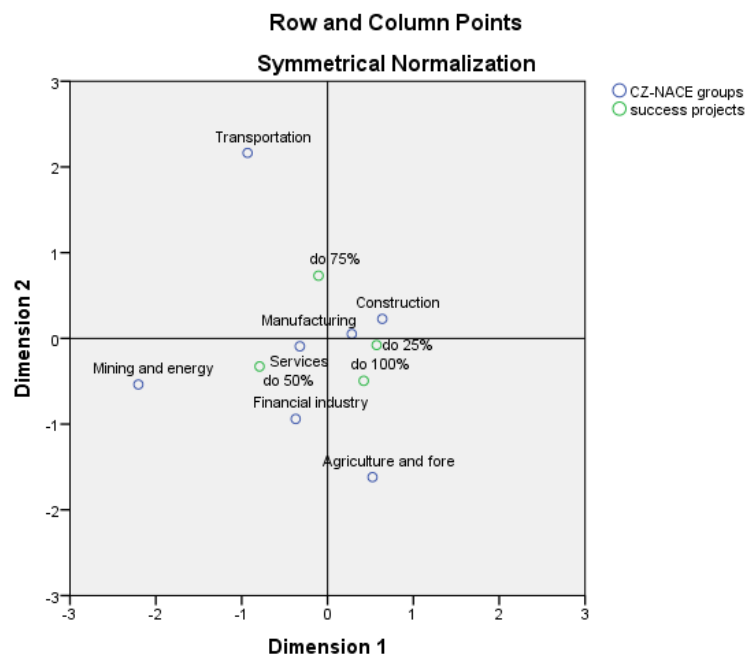
Score in dimension describes individual variables score in two main dimensions. These dimensions don't represent any specific area, because they are reduced to from multi-dimension space. All data in rows and columns have been usually in multi-dimension space, which are reduced into two. Providing information of raw data has not been modified after multi-dimension space reduction of these variables. Inertia indicator represents the share comprehensive information on the profile (on the relevant point). This characteristic is independent of the number of dimensions. Corresponding map includes a graphical representation of both row and column categories according to their dimension scores (Hebák et al., 2007; D'Esposito, Stefano, Ragozini, 2014).

Table 5 Overview points for row and columns (symmetrical normalization)

		Mass	Score in		Inertia	Contribution				
			dimension			Of point to inertia of dimension		Of dimension to inertia of point		
			1	2		1	2	1	2	Total
Row points (CZ-NACE groups)	Mining and energy	,032	-2,204	-,537	,049	,521	,043	,936	,040	,976
	Manufacturing	,471	,283	,052	,011	,127	,006	,975	,024	,999
	Construction	,096	,638	,227	,017	,131	,023	,675	,062	,737
	Transportation	,025	-,931	2,163	,034	,074	,553	,193	,755	,948
	Agriculture and forestry	,025	,523	-1,619	,023	,023	,310	,090	,627	,717
	Financial industry	,013	-,371	-,940	,010	,006	,052	,052	,242	,293
	Services	,338	-,322	-,092	,012	,118	,013	,891	,053	,944
	Total	1,000			,156	1,000	1,000			
Column points Finished projects	till 25%	,293	,572	-,078	,037	,322	,008	,769	,010	,779
	till 50%	,268	-,792	-,327	,057	,565	,133	,878	,109	,987
	till 75%	,268	-,105	,731	,033	,010	,663	,027	,934	,961
	till 100%	,172	,421	-,495	,030	,103	,196	,306	,307	,612
	Total	1,000			,156	1,000	1,000			

Source: own work

Results of correspondence analysis are included in graphs, which illustrate relations between individual categories and variables. Graph 1 shows row and column points of two dimensional solution. By using symmetrical normalization simplifies examining the relationships between individual categories of the variables. Both dimension 1 and dimension 2 provide only „describing space“, in which were CZ-NACE groups and success projects elaborated.



Source: own work

Graph 1 Symmetrical correspond map of row and column points

In graph there are brightly observed four different groups of individual categories. Companies in construction and manufacturing industry usually realise production according to specific requirements (custom manufacturing).

If companies start innovation project, there is high probability they stop the project in 25% level of total. Second group has high dependence on financial resources (includes Mining and energy industry, Services, Financial industry). Therefore, project in the second group usually stop before 50% level of total. Transportation as member in third group has limited possibilities to do innovations. In case of realisation any innovation they are more consequential in the finishing all processes (in comparison with first and second group). Fourth group finishes almost all started innovation or these innovations have only small shorts, which do not affect final result. In this group there are companies in Agriculture and forestry industry, especially winegrowing industry.

5 Discussion

It is obvious that companies must to realise innovation of their outputs to be able to still compete in global environment. The most important are innovations in consumer market with products under non-controllable factors such season impacts or act of God. Except agriculture and forestry industry, there are almost all offering products designed according to final customer's requirements. Therefore, there are relatively low ratios of completed innovations.

Main factors of failed (or uncompleted) projects are various according to individual manager and entrepreneur. However, according to Dvořák (2006) all failures could be included in one of three possible groups which are: (1) technical, (2) economic, (3) other.

The factors of failed innvation projects come from technological and economic point of view in particular. Across all of these groups there is important time perspective, in which many projects are uncompleted (see Table 6). As one of the most important group, Vick, Nagano and Popadiuk (2015) found out technical innovations with close correlation within knowledge aspects.

Van der Panne, van Beers, Kleinknecht (2003) divided all factors only into two groups: (1) technical, and (2) commercial. In technical factors they put field of corporate successful innovation (such R&D team and intensity, corporate structure or culture of organisation). Second technical field is focused on projects (management style, or top management support). Commercial factors are divided in products and market areas. Product factors are focused mainly on price and quality. Market factors describes proces of product launching (e.g. compentition, timing and concentration).

For the purpose of the article we choose splitting by Dvořák, because this groups are more suitable for companies in the Czech Republic. From realised questionnaire survey they were gained frequencies of individual factors in failing. Question for specific factors was open and it could consist more than one answer (Table 6). Individual reasons were answered only by some respondents (not all 157). Therefore, they had possibility to put more than one reason into answer.

Table 6 Main factors of failed projects

		<i>Frequencies</i>	<i>Total</i>
Technical	Unsuitable specification in contractual documents	11	17
	Difficult to describe failures because of the order processing manufacturing	6	
Economic	Failure of finance sources because of the savings	15	24
	Projects results failure in the market	4	
	Additional proof of possible financial revenues (low level)	5	
Other	Inexperience with project realisation	6	10
	Company looks forward the customers instead of finishing innovations	4	
Time	Projects are still in preparing phase before realisation	4	10
	Time dissonance between project planning and project realisation	6	

Source: own work

Conclusion

Innovation projects need systematic approaches as kind of prevention from failures. Appropriate factors of success for innovation projects must be fulfil in perspective of implementation, strategy, planning and organization (Cozijnsen et al., 2000). Main problem could be in differencies of individual industries – each of them is specific. Article was focused on analysis of individual Czech companies (due their industry field) with level of successful projects. All companies were divided into seven groups (see Table 4).

It is obvious in realised analysis that the most realised projects have been done in manufacturing companies (see Table 2). But successful finished projects in manufacturing are only 18,92 % of all started actions. More intensive innovation improving should be in Agriculture and forestry groups, where 50% of all projects are successful finished. That finding is confirmed by graphical examination in which is designed possible correlation with agriculture and forestry industry. These projects were especially in wine growing industry, which must be prepared for any unpredictable situations.

Due defined failure factors we found that main failure group is economic (see Table 6) because of the problems with finance sources.

We concluded that little less than one fifth of all innovation projects in companies (exact amount is 17,2%) were completely finished. At this point there is no differences. From whole sample of companies, 56% failed with started projects to their half. In perspective of individual industry, the most innovative industries are:

1. agriculture and forestry – 50%;
2. manufacturing – 18,92%;
3. services – 16,98%.

This rank is depended mainly on competitiveness of individual industry and number of companies in that field:

1. *Agriculture and forestry* has become specific field, on which many external factors impact in (see Graph 1). From point of view of content this industry, there are included only wine industry. Wine industry is high competitive field in which contain almost 20.000 companies (Koráb, Koráb, 2011). However, in 2013 there were only 150 companies which produced grapes from area over 5 hectares.
2. *Manufacturing*, such whole industry group, produced in 2013 over one fourth of whole products. The best part of manufacturing was (according CZ-NACE) “Manufacture of motor vehicles, trailers and semi-trailers” (group 29) with production on level 23,1%. Second place took “Manufacture of fabricated metal products, except machinery and equipment” (group 25) reached 8,7% and third place got “Manufacture of machinery and equipment” (group 28) with 8,1% (MPO, 2015).
3. From *service* point of view there is hard to separate into individual parts because of differences in the offer service (e.g. consultancy, repairs, arts and entertainment, education).

As way how to support own competitiveness, companies must minimize influence of failure factors, defined in Table 6. That means, companies could finish all started innovation projects with minimal obstacles in most of the failure groups, especially in economical.

Limitations of the article should be several according to point of view. As main limitations there are (1) focus on Czech industry, and (2) lack of time and financial sources to do international comparison. These limitations could define possible further research. It would be interesting to compare gained results with companies in other countries. Focus on other countries has become more important from global perspective.

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Could open innovation methods improve the performance of SMEs?

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Abstract

Purpose of the article There is a growing evidence among innovation researchers and the broader innovation community that application of open innovation methods and techniques are beneficiary for all parties involved. The article presents the findings of a company survey that clearly demonstrates how profitable is for the companies and it pays off to keep looking for new collaboration opportunities and ways.

Methodology/methods The objective of the research was to investigate the extent SMEs applying the open innovation model differ from the ones operating in the traditional closed model reflected by economic indicators. In order to test our hypotheses, we an interview guideline was designed to consult with senior managers of SMEs located in North-West Hungary. The consultation with the companies was carried out by interviewers in the first quarter of 2014. The database of 240 firms offered adequate inputs for research on the openness of SMEs operating in the region.

Scientific aim International surveys and empirical research based on case studies highlight the fact that those SMEs can take the most advantage from open innovation that regularly collaborate with their clients, buyers and different higher education institutions. Our investigation focused particularly on SMEs and sought for evidence that not only small enterprises with cutting edge technologies can be considered innovative, but companies realizing innovation in traditional branches of industry as well.

Findings Based on our investigation we can say that small size by itself does not mean any disadvantage if the organization has intensive collaboration and dialogs with its buyers, suppliers and it makes use of the services provided by different research institutes, universities and other specialized experts.

Conclusions Our conclusions are pretty much in line with the growing number of publications that indicate it is worthwhile and profitable for the SMEs to use open innovation methods. This is verified by the higher turnover, exports and patenting activity of the SMEs actively involved in open innovation.

Keywords: open innovation, collaboration, knowledge and technology transfer, SMEs

JEL Classification: M15, M21

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Introduction

The concept of open innovation originates at such large companies, which are able to integrate their own research activities with external development ideas and technologies (Chesbrough, 2003). The open innovation paradigm can be also interpreted as the opposite of the traditional, vertical innovation model. Rothwell (1994) presented the traditional process as a “technology push” model because in the 1950s and 1960s the industrial innovation process was generally perceived as a linear progression from scientific discovery, through technological development in firms. In this latter stage, the R&D division of the company carries out the product development activity and generally the production too and finally the company sells the resulting products. If we need to describe the open innovation by one sentence we could say that it is the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively. Chesbrough (2003) defines open innovation as a paradigm, which supposes that firms can and should use external ideas as well as internal ideas as they look to advance their technology. The business model uses both internally and externally created ideas to create values; at the same time it defines internal mechanisms to acquire a part of the created value (Molnár, Németh 2009).

Tidd, Bessant (2013) sees that exploitation of external sources and resources to innovation is not a new idea. They have the opinion that open innovation is simply repackaging of existing practice and research. Other authors such as Trott, Hartmann (2009) published good critics of open innovation. In their article they explicitly ask why open innovation is old wine in new bottle.

Even if there a number of studies on open innovation, still empirical evidence on the utility of open innovation is limited and practical advices are rather general. On the one hand, research of open innovation mainly focuses on individual case studies which are difficult to generalize. On the other hand, survey-based research counts of external sources and partners of companies which add little additional knowledge about the conditions and mechanisms of open innovation (Tidd, Bessant, 2013).

Lazarotti, Manzini (2009) investigated various use of collaboration strategies, types and contexts of sources of innovation and they concluded that different degrees of openness for innovation is required to manage different types and degrees of inter-firm relationship with external companies in order to create value. In addition, there other issues to manage (Tidd, Bessant, 2013):

- conditions and context, environmental uncertainty and project complexity (e.g. Schweitzer, Gassmann and Gaubinger, 2011);
- control and ownership of resources (e.g. Klioutch, Leker, 2011);
- coordination of knowledge flows (e.g. Colombo, Dell’era and Frattini, 2011); and
- creation and capture value (e.g. Hopkins, Tidd, Nightingale and Miller, 2011).

The concept of open innovation, however, can be applied for small and medium-sized enterprises (SMEs), since they do collaborate with numerous external organizations, often with other SMEs as well, when developing and manufacturing their products. Chesbrough (2006a) concludes that open innovation to be beneficial for large firms as well as for SMEs. International surveys and empirical researches based on case studies highlight the fact that those SMEs can take the most advantage from open innovation that regularly collaborate with their clients, buyers and different higher education institutions. The innovation activity of successful companies is carried out in an “ecosystem”, whose actors are in dense and intensive relationship with each other. Lindegaard (2011) argues that big companies need small firm as part of their innovation ecosystem. By using this system of relationships built on mutual trust, companies can complement their innovation resources and they can share new ideas with each other (Garget, Fraiha 2012, Gronum et al., 2012 and Vanhaverbeke 2012).

The research was carried out in the framework of the research project focusing on the processes establishing the Győr Industrial District (Rechnitzer 2014). Our investigation was particularly aimed at the examination of SMEs’ innovation specificities. The main goals were the following:

- To what extent it is reflected by indicators that small enterprises applying the open innovation model differ from the ones operating in the traditional closed model?
- What role does collaboration play in the innovation activity of the investigated companies?

Based on the review of academic literature, the first part of this paper presents the most important features of the open innovation paradigm and the appearance of open innovation phenomenon in SMEs; the second part presents the results of the survey that was carried out in West-Hungary in first quarter of 2014. Finally, the study ends by the summary of conclusions and outlining further potential research directions.

1 Different forms of open innovation

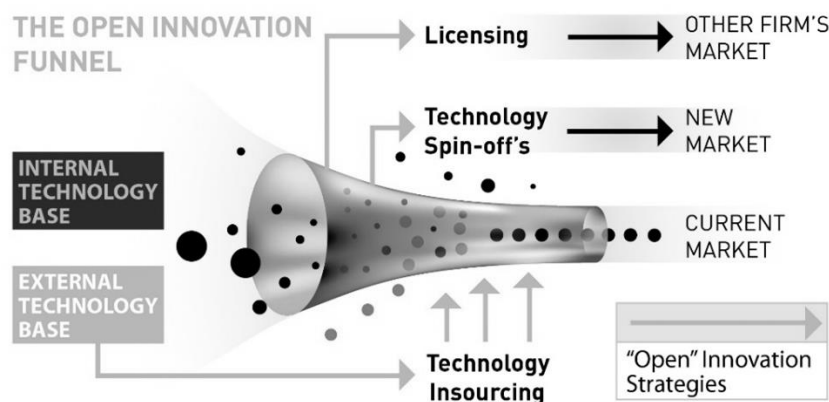
There is no ideal open innovation strategy. Open innovation might be presented in numerous forms and there are several potential ways how it can be used. This depends on the type of innovation and the actors involved in the development process. Different open innovation strategies can be presented the best by the “open innovation funnel” introduced by Chesbrough (2006b) in Figure 1.

Every day, in every moment, several thousands of seemingly brilliant ideas rise in the heads of employees and managers of different companies. A large part of these ideas gets into the above mentioned innovation funnel, however, only a few leave it in form of new products and services: the most of the ideas vanish away in the development process. According to the concept of open innovation the borders of the enterprise’s innovation funnel are permeable, they are full of holes, through which external ideas can get into the funnel and the companies’ dead ideas can get out to the other members of the ecosystem, so that they can implement them on existing or new markets, or by establishing new enterprises. This is easily understandable since our thoughts, intentions, as well as the market, change as time goes by. Sometimes we observe something that seems to be a good opportunity, and then we elaborate product ideas in order to realize this idea. If we do see perspective in the developed idea a year later and the management supports it, different solutions and technologies can be elaborated by the development department of the company based on these ideas. Of course, not all technologies are manifested at once in a product, and they do not always end up as new products and services. The situation is complicated by the fact that often neither the basic idea, nor the technological solution come from the enterprise itself, but from an external source.

The open innovation concept presents the framework necessary for a new product to be introduced in the market, as well as the lead time of the development of product-related opportunities, ideas, technologies and how these processes are related to the different sections of the innovation funnel. Thus, the funnel can be described as a process that can be operated effectively: the identified opportunity needs to be shaped to an idea, the idea needs to be developed to technology, the technology needs to be incorporated in products and services, and the developed product has to be marketed.

Basically, companies have four possibilities when realizing an open innovation strategy (see Figure 1):

1. **Involvement of technologies from outside the company:** At the early stages of the innovation process companies are often aware of the fact that certain external solutions and technologies could significantly accelerate the company’s own development efforts. This is an arbitrary action of companies, in which they involve external R&D resources and solutions in order to complete or replace their own R&D activities.
2. **Technological development within the company.** It is a business practice, in which companies realize in-house all the developments, which otherwise would have been outsourced or subcontracted. Mostly, companies justify their outsourcing decisions by cutting costs or focusing on their core activities, and in this case they have access to more knowledge, talent and practice that would yield higher profit.
3. **Licenses.** Two business actors conclude a contract, based in which the licensor authorizes the licensee to use a certain trade mark, patent of other intellectual property in exchange for the payment of a certain fee, the so-called „royalty”. The license allows the licensor to take advantage of the goods and values created by the licensee.
4. **Technology utilizing firms („spin-out”).** Companies can “spin-out” ideas and technologies not meant for in-house development to other companies, which generally just start their activities on a new market. The utilizing companies can be defined as a group or division of the company heading towards independence.



Source: Chesbrough, 2006b

Figure 1: The open innovation funnel

In conclusion, the most important message of the open innovation concept is that utilization possibilities of a new discovery, technology or any other novelty need thorough consideration and only after contemplation can the decision on the realization method - own or external - be taken, according to which serves the interests of the company the best.

2 Appearance of open innovation among small and medium-sized enterprises

Hungarian and international researches support the fact that besides large enterprises, small and medium-sized companies have significant innovation capacity as well, moreover, not only small enterprises with cutting edge technologies can be considered innovative, but companies realizing innovation in traditional branches of industry as well (Acs, Audretsch 1988, Csizmadia, Grosz 2011).

The authors Brunswicker and van de Vrande (2014) present that in contrast to large enterprises, innovation processes and models show significant differences in case of small enterprises. SMEs are more flexible, because of their faster decision-making mechanisms and they respond faster to the changing demand. However, they face several disadvantages in contrast to the large companies: e.g. they have fewer specialized employees, their resources are limited and their R&D activity is less formalized. From the fact that their resources are limited follows that they cannot engage in all kinds of R&D and innovation activities, thus, they are forced to collaborate with other enterprises or research institutes. Researches verified that those small enterprises that do collaborate with other organizations in many ways are more successful in the realization of the innovation as well.

In several cases, small enterprises lack the ability to articulate their need for external knowledge, technology and know-how in a proactive manner. This is so even when the small enterprise intensively collaborates with other organizations. The other extreme is that the small enterprise collaborates too intensively with other companies, thus, it becomes far too dependent on others or their specific knowledge. Therefore, one of the main goals of the investigation of open innovation is to study how SMEs utilize their network relationships, social capital and external knowledge.

Different empirical researches verified the positive relationship between the size and openness of companies. Furthermore, in the past years researches reported on the ever increasing innovation activity of small enterprises. Small enterprises practice mostly open innovation techniques from outside, in contrast to the diffusion of knowledge created within a company and its utilization jointly with other organizations. The innovation coming from an external source means generally cost free methods, such as networking, it is rare that SMEs would buy licenses to support their development activities. From among the networking activities the collaboration along the value chain can be considered the most frequent; however, the role of collaboration with universities and research sites is also significant. The outward-directed open innovation techniques, e.g. licensing own patents, technologies or know-how are very rarely applied. Presumably they do not have capacities to identify the potential partners and to pursue long negotiations with them. It is also very rare that they publish their product ideas or technologies without requesting financial compensation (Vanhaverbeke 2012).

The open innovation activity of SMEs is mainly determined by two factors: the financial needs of the company and the innovation system of the country. Based on research experiences, the open innovation activity of SMEs is mainly driven by financial motivations. The main hindering factor of openness is the lacking market and technological knowledge of the SMEs, and the ineffective handling of intellectual property rights. The ownership structure of enterprises also has an influence on the open innovation practice of SMEs. The family owned companies, typically, do not pay sufficient attention to open innovation, which fact is not really influenced by the education of the CEO or the management (Brunswicker, van de Vrande 2014).

Research results also verify that besides the collection of external ideas innovation collaboration and R&D mandates for external experts have a positive impact on SMEs' innovation. This impact is, however, influenced by the age of the enterprise and its position in the life-cycle. Open innovations techniques have a rather major role in young SMEs of a couple of years of age. Besides this, the SMEs' strategies on obtaining new ideas, technologies and knowledge do have a major influence on the impacts of open innovation methods. It is interesting how different open innovation practices have different impacts on incremental and radical innovation. While the role of the search for new technologies is more significant in the incremental innovation, licensing patents is rather characteristic for SMEs introducing radical innovations. Vertical collaboration with the buyers and end users of the supply chain has beneficial impacts on radical innovation.

Also, the role of those networks needs to be highlighted, which play a determining role in the performance of spin-off and start-up companies, as well as in SMEs in general. Especially those SMEs' performance is getting better that participate in informal knowledge networks. Usually, these networks are regional initiatives encouraging knowledge sharing and network collaboration among the representatives of different organizations, e.g. innovation agencies, business incubators, university technology transfer offices, start-up companies and venture capital firms. Researches verified that the dynamics of SMEs' network relations and collaboration have a beneficial impact on their strategic decisions and activities. While large companies would be able to carry out open innovation even without strategic changes, in case of SMEs the opening and openness stand for a radical strategic shift (Vanhaverbeke 2012).

In case of SMEs we need to mention their disadvantage: when developing a new product or service some of their capabilities are typically incomplete for the rapid and successful market uptake. Therefore, it is advantageous for them to apply open innovation techniques not only in the development phase, but in the commercialization phase as well. However, SMEs only scarcely notice their own limitations by themselves. There is a need for intermediaries, on the one hand to identify failures, on the other hand to suggest services and experts matching their needs. Besides, SMEs need to make decisions on the type of communication (informal, semi-informal or formal), on whom, what organizations they trust and how they plan to handle the inevitable potential conflicts (Döry, Tilinger, 2012).

Finally, SMEs applying open innovation methods need to be prepared to develop their management skills. It is possible that certain SMEs cannot carry out successful open innovation by themselves, without the assistance of an innovation network manager. Thus, a body needs to be established, whose main task is to motivate and inform the SME's managers and owners on the tricks of implementation and to facilitate collaboration and knowledge-sharing. (Brunswick, van de Vrande 2014)

3 Findings of the company survey in North-West Hungary

The investigation of open innovation behavior of SMEs was part of a larger project aimed at the analysis of the factors contributing to the longer term development of the „Győr Industrial District”. This North-West Hungarian automotive region hosts AUDI and its suppliers as well as several leading international and domestic actors in the field. In order to increase of the economic potential of the region it is foreseen to devote special support for this geographic area of international relevance.

The consultation with the companies was carried out by interviewers in the first quarter of 2014. As a result of this research, a database composed of 240 companies was established that offers adequate inputs for research on the openness of SMEs operating in the region.

3.1 Definition of open companies

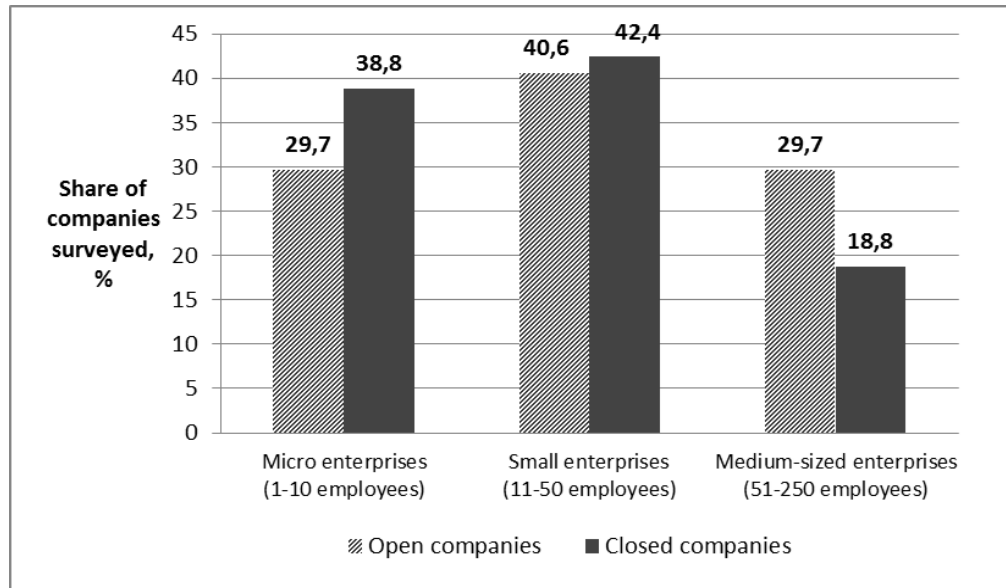
To be able to examine the behavior of open and closed companies and the differences between them we need to define the group of open companies. According to the literature the base of openness is the collaborative behavior when carrying out R&D and innovation activities. Therefore, we consider those companies to be open, in which the following conditions are fulfilled based on respondents' evaluation in the survey:

- Carry out innovation activities jointly with external partners.
- Seek to obtain external ideas, knowledge and innovative solutions.
- Involve external partners in identification of new innovation opportunities.
- Collaborate with their customers and suppliers.
- Collaborate with universities and research institutions.
- Collaborate with intellectual property experts.
- Collaborate with networking partners.
- Develop innovation strategies jointly with their research partners.

The above conditions are fulfilled by 65 companies (27.1%) out of the sample of 240 companies which are considered in the analysis as „open companies”. For the sake of convenience we called the remaining 175 companies (72.9%) „closed companies”.

3.2 Differences between open and closed companies

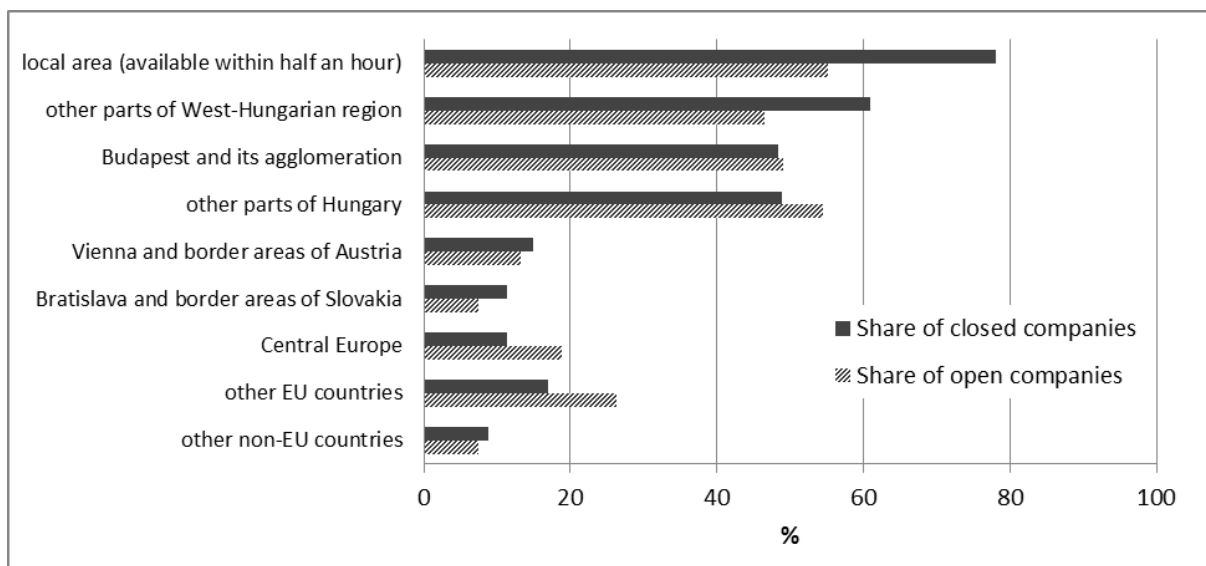
Considering the number of employees we can say that in the cluster of open companies the proportion of micro-enterprises below 10 employees is lower than in case of the closed companies, while the proportion of medium-sized companies' is higher. Considering the proportion of small enterprises, there is no significant difference between open and closed companies. From all this follows that the larger a company is the more open it can be considered (see Figure 2).



Source: Own compilation of the author

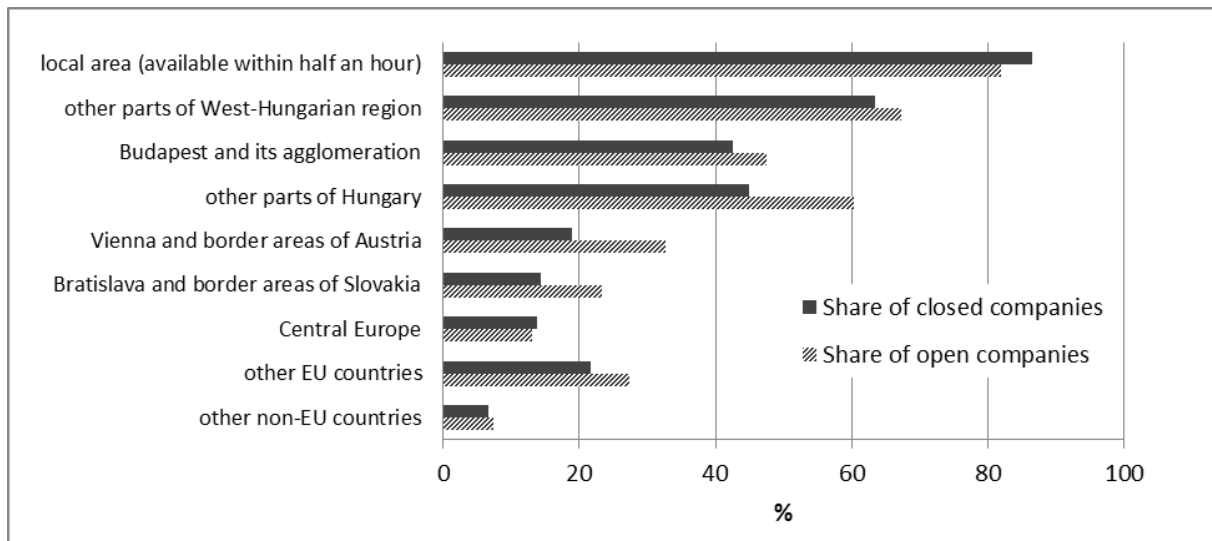
Figure 2 Average statistical number of employees of surveyed firms, 2012

Based on economic data of surveyed companies in the 2010-2012 period, the survey revealed that 15.7% of the open companies' annual turnover came from exports. In case of closed companies this figure is quite similar (13.9%), therefore there are no major differences among the two types of firms with regard to this indicator. In the survey we also wanted to see from which geographic regions the companies' purchases were delivered from, and where they market their products/services in the 2010-2012 timeframe. Considering both purchases and sales it is noteworthy to be noted that as we move from local towards global level the proportion of open companies is getting higher in contrast to the closed ones. This means that the relations of open companies are less limited to the local level and a larger proportion of open companies have buyer or supplier relations with foreign partners (see Figure 3 and Figure 4).



Source: Own compilation of the author

Figure 3 Purchases of surveyed firms by geographic regions



Source: Own compilation of the author

Figure 4 Sales of surveyed firms by geographic regions

Furthermore, it should also be noted that a higher proportion of open companies prepared strategic documents facilitating the companies' development: 43.1% has a business plan and 28.1% has an innovation strategy. In the case of closed companies these figures are much lower 32.6% and 8.7%, respectively (see Table 1).

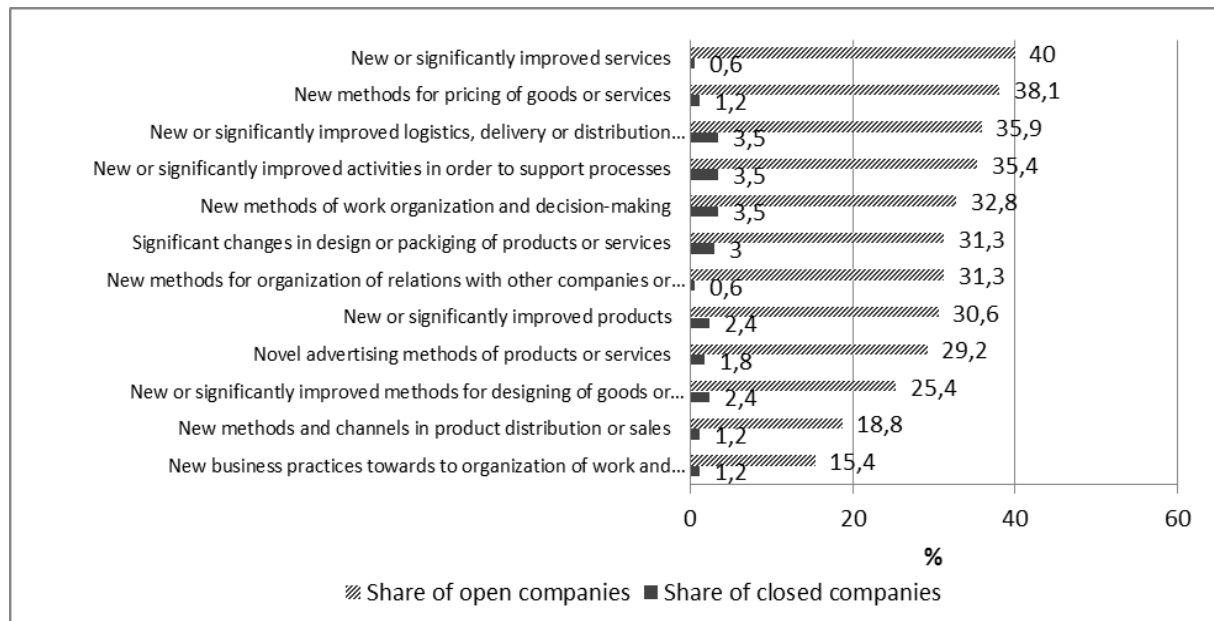
Table 1 Existence of strategic documents

Document	Open companies (%)	Closed companies (%)
Business plan for 1-3 years	43.1	32.6
Written innovation strategy	28.1	8.7

Source: Own compilation of the author

Concerning research and development (R&D) expenditures, 14.1% of the open companies carried out or commissioned R&D activities in the 2010-2012 timeframe. This, by itself, is not a high proportion, but in case of closed companies this ratio is even lower: 7% of the companies carried out R&D activities of this kind.

We also examined whether the companies had introduced any innovations between 2010 and 2012. There is a significant gap between the open and closed companies. A significantly higher proportion of open companies had introduced some kind of innovation. (see Figure 5)

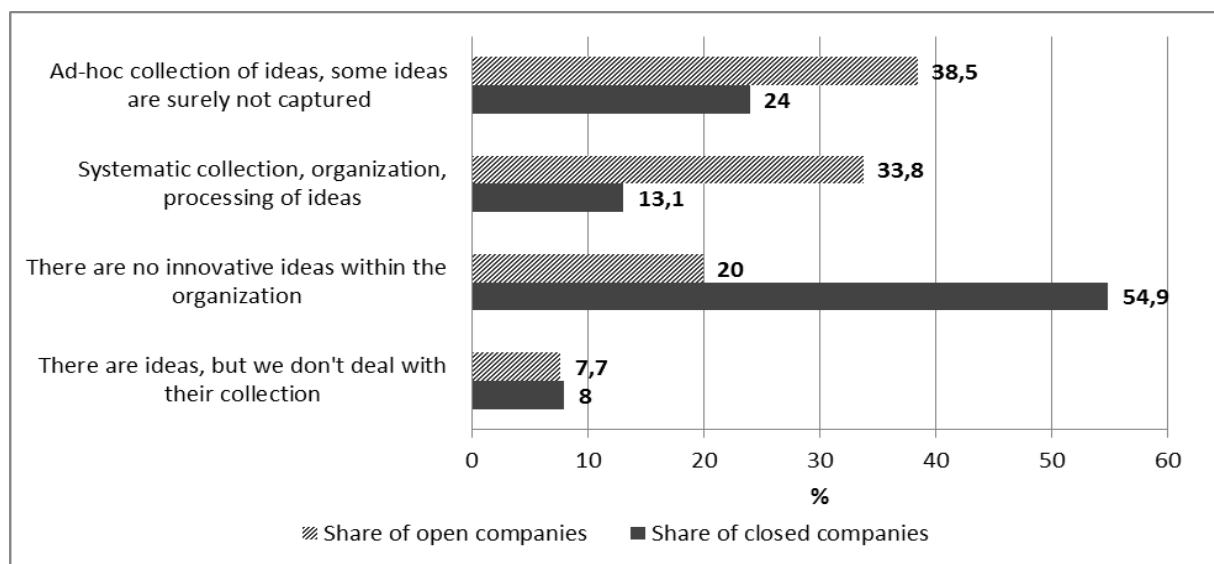


Source: Own compilation of the author

Figure 5 Innovations introduced by types of companies, 2010-2012

Examining the number of people employed in R&D we can say that 11.1% of the open companies' employees worked in the field of research and development in the 2001-2012 timeframe. This proportion is lower in case of closed companies: 2.4%.

A higher proportion of open companies collect innovation ideas developed within the organization, which can form basis for further development or innovation. Systematic collection, organization, registration are characteristic for 33.8% of the open and 13.1% of the closed companies. Ad-hoc collection, where a significant part of the ideas is getting lost - is characteristic for 38.5% of the open companies. Considering this indicator, the position of closed companies is better: 24% collects ideas in an ad-hoc manner (see Figure 6).



Source: Own compilation of the author

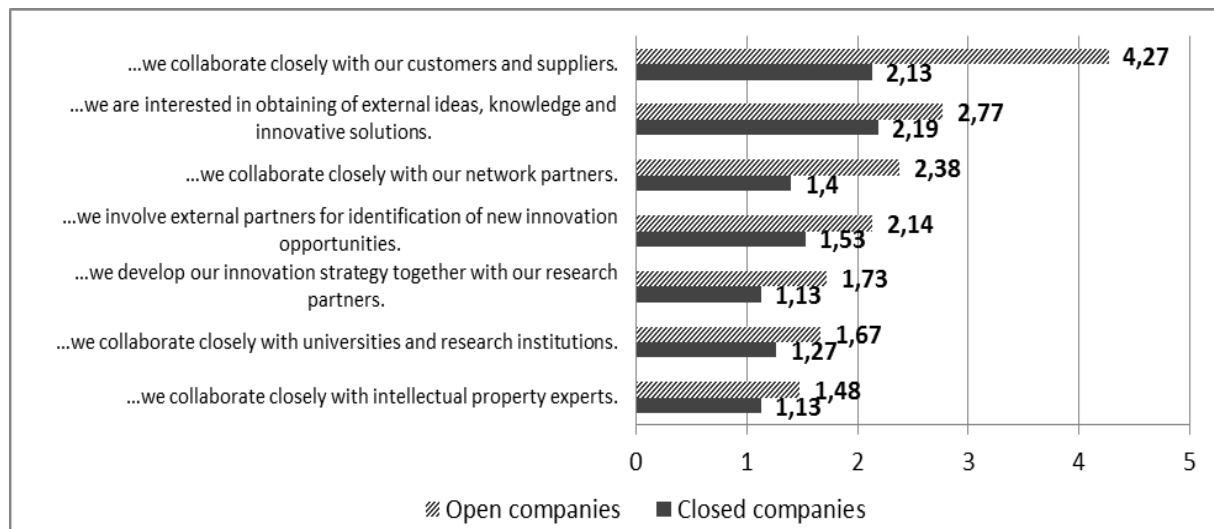
Figure 6 Conscious collection of the innovation ideas emerging within the company

In the survey, the respondents had to evaluate on a 5-point scale (1: not at all, 5: significantly) how they encourage their own employees to generate new ideas and develop them further. The average of the answers was higher in case of

open companies (2.67) than in the group of closed companies (2.27). From this result we can draw the conclusion that open companies encourage more often their employees to innovate and propose development ideas than their closed counterparts. In addition, respondent companies had to evaluate on a 5-point-scale (1: not at all, 5: fully applicable) what collaborative behavior is characteristic for the company when carrying out research, development and innovation activities (see Figure 7).

Based on the average scores of the answers – examining the differences between the behavior of open and closed companies – we can draw the following conclusions:

- Collaborative behavior is generally stronger in open companies than in closed ones;
- Collaboration with customers and suppliers is more characteristic for open companies;
- Collaboration with network partners is more characteristic for open companies.



Source: Own compilation of the author

Figure 7 Evaluation of the companies' collaborative behavior

3.3. Where does open thinking lead to?

The average annual net turnover of open companies exceeds significantly that of the closed ones. In 2012 this figure was HUF828.9 million (about €2.8 million) in case of the open companies, which is 14.7% higher than the average turnover of the closed companies (HUF723.5 million or €2.5 million).

In the three-year-long timeframe of 2010-2012, 28.6% of the open companies could increase their export income, however, only 13.7% of the closed companies. In the same timeframe of 2010-2012, more than half of the open companies (55.6%) could increase their expenditures on research, development and innovation. In contrast to this figure, only 21.4% of the closed companies could increase their expenditures of this type.

Considering the change in number of the people employed in the field of R&D, the situation is more favorable in case of the open companies: 41.7% of them could increase the number of employees, while in case of the closed companies this figure was only 9.1%.

When examining the patent applications, we can say that 7.9% of the open companies had submitted patent applications since their foundation. In case of the closed companies this figure is only 1.1%! The difference between open and closed companies is underlined by the fact that 11.7% of the open companies is planning on submitting patent applications in the following three years, while in case of the closed companies only 2.4% has such plans.

4 Conclusion and outlook

The research of open innovation in small enterprises has started in the recent years in international context as well. However, the conclusions in the growing number of publications and the experiences of the survey carried out in the Győr Industrial District are in line with each other: they indicate that it is worth and profitable for the SMEs to use open innovation methods. This is verified by the higher turnover, exports and patenting activity of the SMEs actively involved in open innovation.

We assume that the main difference between open and closed companies lies within their collaborative behavior, i.e. the open companies carry out more active collaborative activities. Open companies are rather characterized by international relationships and innovativeness; these factors determine their turnover and the number of employees, since these figures are typically higher than in closed companies. Openness involves dynamics and development as well: it contributes to the increase in the number of employees in the field of R&D and the export revenues; besides, the number of patent applications is higher too.

However, behavior of companies doesn't change overnight. Still, there are clear signs of openness: open companies operate in a proactive manner in the field of development, since they collect and organize innovation ideas born within the organization, they encourage their employees to elaborate new development ideas, and they are aware of the benefits originating in collaboration. Open companies operate with their eyes open, in their case external impacts have a more determining role in the innovation activity than in case of the closed companies, since new directions and changes of the business environment need to be foreseen and followed as soon as possible.

In spite of the fact that the evaluation of the details of the open innovation methods' application was not carried out in the Győr survey, we can say that small enterprises realizing open innovation are more effective and, presumably, more competitive than the ones operating in the traditional closed framework. Nevertheless, there is a need to continue this research and analyze the development of ideas and selection mechanisms at the very beginning of the process along with the collaboration established to realize them. In connection with the conclusions of Brunswicker and van de Vrande (2014) the fact was verified by our investigation that small size by itself does not mean any disadvantage if the organization has intensive collaboration and dialogs with its buyers, suppliers and it makes use of the services provided by different research institutes, universities and other specialized experts.

Knowledge providers, participating at the early stages of the small enterprises' innovation activities in the generation and validation of innovative ideas, as well as in the selection, could form also a base for further investigation. It would be important to analyse this phenomenon because the players don't understand what the other wants, as academics and business people speak a different language. To put it simply more communication is needed from both parties. The first step towards becoming open is to understand the drivers. The second step is to slowly open the search for partners, the management process and finally the outcomes (Alexander et al., 2012).

The authors Csizmadia and Grosz (2011) made important findings on relationship networks' impact on innovation; it would be preferable to improve this research and to extend the analyses to the frequency and efficiency of different networking methods. Especially the role of social capital and the dependency of small enterprises on network relationships should be analyzed, since there were no results published in the literature that would explore the role of different relationships in the realization of open innovation.

Also, interesting conclusions can be drawn from the research on why Hungarian (small) enterprises do not buy licenses and why they do not think about purchasing know-how. One of the potential reasons could be the high cost of the protection of intellectual property rights, but probably SMEs do not think about obtaining such incomes, since this terrain is supposed to be rather abstract and complex, and it has to be said that this, for the most part, is true. Finally, small enterprise management methods, business organizational processes, business strategies and business plans could also be interesting objects of research, since the realization of open innovation requires serious coordination mechanisms and delegation, which show deficiencies even in larger organizations.

Acknowledgment

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McDonald's in Poland as a cultural brand in the view of attitudes of nostalgia and acculturation

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Abstract

Purpose of the article Analysis of the attitudes of Poles towards McDonald's based on the identification of two opposite social attitudes towards globalisation processes and perception of cultural brands, the so called acculturation and nostalgia.

Methodology/methods The record of Internet users' discussion has been analysed by means of qualitative analysis. The record of the discussion shall be regarded as an expression of opinion by an incidental group of respondents. For the purposes of the conducted research programme weftQDA 1.0.1 for the analysis of qualitative data has been used.

Scientific aim Utilization of postmodern interpretation of the socio-cultural context of running business for purposes of strategic management.

Findings The main differences between the supporters of the two attitudes towards McDonald's (acculturation and nostalgia) were related to two problems. Firstly, the discussion concerns what McDonald's really is (how its service should be classified). Secondly, the thread of the discourse concerns the quality of McDonald's offer. Further discussion involved the issues of impact of McDonald's on the domestic business, and lifestyle of contemporary Poles and their dining habits.

Conclusions The result of the presence in the opinions expressed by Internet users to McDonald's of two opposing attitudes (i.e. acculturation and nostalgia) needs to be confirmed on a representative sample of respondents. However, it may be said that McDonald's in Poland should be in a position to confront the problem of local socio-cultural context (as a source of uncertainty) in strategic planning.

Keywords: brand, culture, McDonald's, globalisation, strategy

JEL Classification: M1, M10

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Introduction

Contemporary globalisation does not only refer to territorial expansion of business activity but also to dissemination of, first and foremost, qualitative changes in the sphere of market integration and regulations concerning the flow of products, capital and people (Rymarczyk, 2004). Globalisation is regarded as a phenomenon which is characteristic for postmodern description of reality, including economic, cultural and political spheres, and the beginnings of its scientific description (not its actual occurrence as a fact) shall be looked for, above all, in the 1980s (Kostera & Sliwa, 2012).

Postmodernism as an intellectual formation assumes lack of metanarration in the description of reality and interpretation of facts. Personal observations are of equal or even greater significance than socially present arrangements, whereas various personal opinions are equal. In this respect, it is impossible to create objective descriptions of reality since they are always immersed in the local and individual contexts. These assumptions about fragmentation of descriptions and the cognitive process are important for economic analyses. Contemporary attempts to evaluate economic efficiency of an enterprise have to, *inter alia*, struggle with parallel consideration of such problems as strategic and operational dimensions regarding evaluation of the success of an enterprise (thus, taking into account qualitative and quantitative evaluations), or upon the notions of property and supervision (especially from the perspective of their division) reconciliation of the interest of an enterprise with the interest of groups which are connected with the activity of an enterprise (Kostera, 1996), which is nowadays sanctioned by, *inter alia*, concepts of social responsibility of a business and sustainability.

An essential feature of the postmodern description of reality, including the theory of management of the enterprise, are issues of shaping the structure of social relations as well as the roles assumed by group members in particular situations (Boje, Gephart & Thatchenkery, 1995). It is worth noticing that these aspects thanks to, *inter alia*, fragmentation of the cognitive process which has been mentioned earlier, are dynamic (McKelvey, 2003). Dynamics which occurs on the level of individual persons becomes the second force that shapes contemporary image of globalisation. On the one hand, one comes across trends towards dissemination and standardisation which are represented by the economic world, however, on the other hand (the social sphere), there are also attitudes which are prejudiced against this trend. This attitude is equally socially validated as favour towards the process of globalisation. Simultaneously, the existence of social attitude of "anti-globalisation" turns the social sphere into a factor, which, next to economic processes and on a par with them, shapes the process of globalisation (Welsch, 1999). The pace of changes taking place in the sociocultural sphere is in turn possible thanks to, above all, modification of practices which are understood as the so called visible cultural sphere (Hofstede, Hofstede & Minkov, 2010).

As a result, strategies of enterprises should be adapted in accordance with cultural and consumption differences between countries/nations/social groups at which particular business activity is aimed (Park & Rabolt, 2009). This remark entails significant consequences. In connection with fragmentation of description of reality as well as active role of societies/groups/consumers enterprises need to take local sociocultural context into consideration. Nowadays, it is this very context (not standardisation of offer) which is regarded as the key one for the efficiency of activity of internationalised enterprises (Qin, Ramburuth & Wang, 2011).

1 McDonald's as a global enterprise

McDonald's is tightly connected with the definition of something that may be referred to as the exemplification of "Americanness". Right after the Second World War McDonald's witnessed and participated in social transitions in the USA. Thanks to its strategy of activity invoking mobility, speed and standardisation manifested in the principles of serving the maximum number of customers within a time unit and offering products at a low price, the enterprise became an integral part of the cultural context of America and then also its cultural symbol (Tańska, 2002).

Nowadays, McDonald's is perceived, above all, as a global giant, i.e. an enterprise which operates on a global scale and makes the most of its attributes, which, in the opinion of some, enables to describe its activity from the perspective of transnationality (Watson, 1997).

However, it is worth highlighting that presence of the enterprise, thanks to its connotation with "Americanness" is perceived as a symbol of social, economic and political transitions which take place in various parts of the world, nowadays, in Asian countries in particular (Goodman & Robison, 2013). As a result, McDonald's becomes an entity which, according to many opinions, has to face contemporary management problems. Among them the application of glocalisation (globalism and localisation) strategy may be mentioned, which is often present in the marketing sphere (Vignali, 2001) and which results from a high level of internationalisation of the company's activity and the need to become an integral part of the local sociocultural context.

At this point, it should also be emphasized that the meaning which McDonald's brand entails is connected with its cultural aspect and perceived differently in various parts of the world. It is pointed out that in many countries this brand/enterprise constitutes the symbol of affluence and wealth, whereas it is not the case in its home country (Kincheloe, 2002). Moreover, the importance of the brand is also an element of a conscious strategy of the enterprise itself.

It uses the excess of information and knowledge in the contemporary world which results in fragmentary cognition and similarly fragmentary memory of the representatives of communities creating what is being referred to as the superficial meaning of its own brand name among consumers. McDonald's promotional activities in the USA aimed at children and focused on a healthy, balanced and varied diet which may be attained thanks to the company's offer may serve as an example of such activity (Kincheloe, 2002).

Nowadays, however, also societies themselves manifest some activity in shaping of reality, including the economic sphere. Thus, there is a social movement in the United States which pursues the fight against obesity in the American society, which has already enforced certain solutions in McDonald's (launching of the so called healthy food offer). Whereas, presence of the enterprise in China results in a division of the society into two opposing attitudes. The research results indicate that cultural significance of the McDonald's brand is often in opposition to traditional Chinese cultural values connected with the collectivistic nature of the society of this Asian country, which also finds its reflection in eating habits. Simultaneously, McDonald's is thereupon perceived, especially by young Chinese people, as a manifestation of modernity and new view of social relations. It points out that the meaning of the brand depends on co-shaping of traditional and new values for a particular local culture (Eckhardt & Houston, 2002). At the same time, it suggests that there is active participation of the society in this process, which, in this context (the McDonald's case), is connected with its representatives being in favour of one of the possible attitudes towards the process of globalisation. Among these attitudes the following may be distinguished: acculturation (the process of changes taking place between groups or between groups and individuals representing distinct values, the result of which is a generation of syncretic values); and nostalgia, that is longing for values which are traditional for particular groups and individuals as well as attempts to return to them (Guzmán & Paswan, 2009). These arrangements, according to the description of contemporary brands, which, from the perspective of both enterprises and consumers, are a subject of accumulation of symbolism and a way of cultural self-expression (O'Reilly, 2005), make it possible to state that McDonald's may therefore also be regarded as a cultural brand.

2 Objective and research methodology

The intention lying behind the conducted research was to determine attitudes of nostalgia and acculturation towards McDonald's brand expressed by the representatives of the Polish society. For the purposes of its realisation statements of Internet users under the article concerning closing in Warsaw on 1 Oct 2014 the first eating place of this franchise chain published on warszawa.gazeta.pl website on 30 Sep 2014 were analysed (Wyborcza, 2014). The article contained seven photos of the eating place opening celebration on 17 Jun 1992. The title of the article and its layout served as a pretext for expressing opinion on the subject of McDonald's brand by an incidental group of Internet users. The record of 77 statements of the discussion under this article was obtained altogether (the record of the discussion was made on 30 Sep 2014 at 5.21 p.m.). It is worth highlighting that on the day of opening of this eating place in Warsaw the world record in the number of transactions that were carried out was broken (13300 orders). The record was broken again when the second eating place of this franchise chain in Poland was opened in Katowice: 13600 orders (McDonald's Corporation Wikipedia). These facts show the importance of the Polish market for McDonald's which opened to foreign investors along with political changes at the beginning of the 1990s.

The Internet users' statements under the article on gazeta.pl mentioned above were divided into 9 threads (in accordance with the answer tree). The content of these statements underwent analysis the purpose of which was to track down statements that were connected with expression of opinions and attitudes characteristic for either acculturation or nostalgia. The next step was to code the collected source material in compliance with the adopted dichotomy (acculturation vs. nostalgia). Weft QDA 1.0.1. was used for this purpose.

The conducted analysis of the Internet users' statements concluded with the exclusion of threads 2, 5 and 9 from further research procedure. The Internet users' statements within these threads concerned: the price of McDonald's products in Poland at the beginning of the 1990s (thread 2 and thread 5); within thread 5 there was also a problem with writing down the abbreviations of currencies in international transactions; whereas thread 9 was totally connected with the opinion regarding the quality of photos taken on the opening of the first McDonald's eating place in Poland which were presented in the cited article on gazeta.pl. As a result of the conducted coding procedure, the content classified to the "acculturation" group amounted, in total, to 1238 signs (they were present in 5 threads altogether: 1, 3, 4, 6, 7), whereas in the "nostalgia" group there were 1344 signs (present in 6 threads altogether: 1, 3, 4, 6, 7, 8).

Table 1 Overall information regarding coding

Code	How many documents does it occur in?	Number of signs assigned to the code	Number of codes
Acculturation	5	1238	9
Nostalgia	6	1344	13

Source: Own work

In order to assess reliability of coding the second person was asked to code part of the material on the basis of the assumptions of the research. Threads 4 and 6 were selected for that purpose. The choice of them was justified by their length: these are the two longest threads with 21 statements altogether, i.e. 27.7 % of all statements in the collected record of the whole discussion. Subsequently, both coded versions were compared with regard to presence of one of the codes in the given statements (acculturation or nostalgia). Value 1 was assigned if a given code was present, whereas value 0 was assigned when there was no code. The Krippendorff's Alpha coefficient was calculated on the basis of nominal data obtained in this particular way. The obtained values of this coefficient for both codes are presented in the table 2. They fall within the ambit of 0.67-0.8 and may therefore be regarded as sufficient (Reidsma & Carletta, 2008).

Table 2 Values of the Krippendorff's Alpha and Cronbach's Alpha coefficient for the codes

	Krippendorff's Alpha value	Cronbach's Alpha value
The "acculturation" code	0.7438	0.863
The "nostalgia" code	0.7211	0.857

Source: Own work

The value of the Cronbach's Alpha coefficient was also calculated so that the obtained indication regarding the reliability of coding could be confirmed. In this case the results at the level above 0.8 were obtained. Thus, it may be stated that in this case the Cronbach's Alpha values signify appropriate reliability of coding.

While making the analysis of the Internet users' statements, it becomes indispensable for the researcher to refer to the role assumed by the participants of virtual reality. For it is freely shaped by Internet users themselves and may influence the results of the conducted analysis (Markham, 2004). Therefore, all the participants of the discussion within the framework of threads which were taken into consideration were identified (threads 1, 3, 4, 6, 7, 8). Their number amounted to 19 persons: 6 of them expressed opinions connected with the attitude of acculturation (31.58% of discussants), whereas the attitude of nostalgia was manifested by 13 persons (68.42% of discussants). The table 3 presents the list of all participants of the discussion in six threads which were selected for the analysis and their activity in expressing opinions in favour of either nostalgia or acculturation.

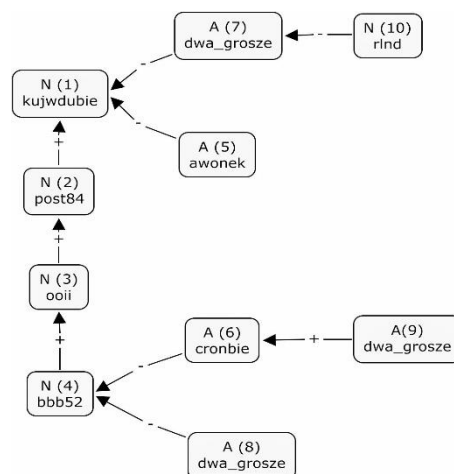
It should be noticed that during the discussion each of the participants supported one attitude that was familiar to them (acculturation or nostalgia). Within 6 studied threads the total number of 9 statements expressing acculturation (39.13% of all the statements) and 14 statements expressing nostalgia (which constitutes 60.87% of all the statements) were identified. It should also be noticed that although there were more supporters of the attitude of nostalgia (13 persons) than acculturation (9 persons), the latter were more active during the discussion. It may be stated that there is 1.5 statements for one supporter of acculturation, whereas for one supporter of nostalgia there is 1.08 statements.

Table 3 Participants of the discussion and their statements presenting opinions conforming to either acculturation or nostalgia

Participant	Acculturation	Nostalgia
emilypotter	1	
ol69		1
zz111zz		1
quosoo	1	
andrzej jeziorek		1
brat_ramzesa		2
rumpa	1	
petrrr1		1
mis_rys		1
kujwdubie		1
post84		1
Ooii		1
awonek	1	
cronbie	2	
dwa_grosze	3	
rlnd		1
szyderczy_szyderca		1
ao.a		1
bbb52		1
Total	9	14

Source: Own work

While analysing the course of the discussion within particular threads, it may also be noticed that the activity of participants of the discussion was focused on disagreeing with persons of opposing opinion or emphasizing agreement and legitimacy of views with persons representing the same attitude towards McDonald's. The figure 1 which shows dynamics of the discussion within the most elaborate thread in the discussion (thread 6) serves as a visualisation of the problem. The marks used are as follows: a figure in brackets - order of answers within a thread; A- an answer represents the attitude of acculturation; N- an answer represents the attitude of nostalgia; arrows represent reference of one statement to the other, whereas the plus and minus signs refer to agreement or contrariety of statements being referred to.



Source: Own work

Figure 1 The course of discussion in thread 6

Summing up, it may be stated that discussants within six analysed threads expressed clear opinions connected to the assessment of McDonald's in Poland which was related to the attitude of nostalgia or acculturation being expressed by them and sustained their opinions in a continuous manner during the discussion. These arrangements made it possible to realise further steps of the research procedure.

3 Analysis results

The analysis of the researched content of threads made it possible to distinguish particular issues raised by discussants and assign them to the appropriate category (nostalgia/acculturation). The issues are summarised in tables 4 and 5. It should be emphasized that two different issues could have been distinguished in one statement (this concerns thread 4 within the "acculturation" group).

The discussion regarding the perception of McDonald's in Poland was dominated by the issue of the status of the company and services it offers. Discussants got into an argument whether McDonald's should be referred to as a restaurant (such term was used by the author of the article). Opponents of this point of view pointed out traditional understanding of the term "restaurant" in Poland concerning an eating place with a range of customer facilities, e.g. waiting service. Supporters of referring to McDonald's as a restaurant, in turn, raised the issue of the way in which the term is understood and used all over the world. They also pointed out the differences between the scope of services and their quality between "restaurants" and "bars" (the aim of which was to prove that McDonald's should not be regarded as "a bar").

The exemplary discussants' statements which were for referring to McDonald's as a restaurant are presented below:

- Thread_6 [767-908]; user- dwa_grosze:
"Remember once and for all that McDonald is a restaurant. Acquaint yourself with the definition of the word restaurant which is used in the Western world."
- Thread_6 [1236-1393]; user- cronbie:
"You can drink alcohol in a bar. You can't do that in McDonald's."
Whereas, the exemplary discussants' statements being in opposition to the claim saying that McDonald's eating places are restaurants are as follows:
- Thread_6 [148-192]; user- ooii:
"There is neither a waiter nor a cloak-room;) It's a canteen."
- Thread_8 [6-213]; user - ao.a:
"I'm not going to call it restaurant because it has nothing in common with a restaurant."

Table 4 Issues assigned to acculturation within particular threads

Thread no	Content of the issue	Number
1	• Positive response to the offer upon the opening of McDonald's	1
3	• McDonald's lets Polish business develop (franchise)	1
4	• Standardisation of products	1
	• Possibility to satisfy one's hunger quickly	1
6	• McDonald's as a restaurant	5
7	• McDonald's as a restaurant	1
8	• Lack of answers concerning acculturation	0

Source: Own work

Table 5 Issues assigned to nostalgia within particular threads (according to the number of statements)

Thread no	Content of the issue	Number
1	• Homemade food is better	1
3	• Concern over Polish enterprises	2
4	• Presumption of "chemical content" of McDonald's products	1
	• Regret over lack of ability to prepare meals at home on one's own	2
6	• McDonald's as a bar	5
7	• McDonald's as a bar	1
8	• Poor quality of food in McDonald's	1
	• McDonald's as a bar	1

Source: Own work

There were 13 statements concerning this topic altogether within six analysed threads, out of which 6 concerned acculturation (it was a call for taking into account the international meaning of the term "restaurant" in the context of business form conducted by McDonald's), whereas 7 statements supported nostalgia by raising the importance of traditional Polish understanding of the words "bar" and "restaurant".

Table 6 presents a list of frequencies of all the issues related to acculturation and nostalgia raised within the analysed threads.

Table 6 Issues of acculturation and nostalgia in threads of the discussion altogether

Discourse	Acculturation	Nostalgia	Total
Status of McDonald's (restaurant/bar)	6	7	13
Quality of meals	2	3	5
Form of development of domestic enterprises	1	2	3
Form of satisfying the need for food	1	2	3

Source: Own work

The second most popular issue raised by the discussants was the issue of quality of meals offered by McDonald's (5 statements altogether). Supporters of acculturation (2 statements) pointed, above all, at standardisation of dishes offered by McDonald's which they regarded as a major advantage of the company's offer (they correlated this statement with the possibility to avail oneself of exactly the same service all over the world). Whereas, supporters of the attitude of nostalgia (3 statements) raised the issue of chemical processing of products offered by McDonald's and their possible influence on health. It should also be noticed that the discussants supporting nostalgia pointed out higher quality, including the gustatory value of traditional, local dishes, and called for opening of this type of eating places.

The exemplary statements which illustrate these attitudes have been presented below (the first one is related to the attitude of acculturation, the second one - to the attitude of nostalgia):

- Thread_4 [414-565], user – rumpa:
"The point is that I prefer McDonald's and that's it. Just like that. It is optimised. It always tastes the same and new tastes usually make me retch."
- Thread_4 [13-197], user- brat_ ram-zesa:
"While in Kiev, I noticed that there was just one McDonald in the city centre. Ukrainians simply don't go there as they regard them as muck. For them it is a chain of fast food bars with Russky food. Forget about McDonald's. Poland could also open its chain with its own food, the one from the East could be served as well."

Another issue raised by the discussants was the problem of influence of McDonald's activity on Polish business. One side pointed at lack of possibility of Polish enterprises from this sector to compete with a global tycoon, whereas the other one pointed out that Polish companies may actually develop themselves as franchisees of the McDonald's chain. The last issue defined in the analysis of the Internet users' discussion was the issue of the habit of Polish people regarding the form of satisfying the need for food. It is about confronting traditional way which consists in preparing meals on one's own at home with availing oneself of services of all kinds of eating places (especially the so called fast food ones which are mainly regarded as competitive against preparing and having meals at home).

4 Findings

The key issue for the Internet discussants in the researched threads was the issue of classifying business activity conducted by McDonald's. The significance of this problem may be noticed while analysing the list of frequency of usage of particular words in both categories of the analysis (acculturation and nostalgia). Word clouds devised for a particular category on the basis of excerpts of the discourse content coded and assigned in an appropriate way are presented below (QSR NVivo 10 has been used for that purpose).

The word clouds show that supporters of the attitude of acculturation of McDonald's as a brand, most frequently used the word "restaurant" and its inflected forms (15 times altogether), whereas the word "bar" and its inflected forms were used 10 times. It coincides with previous remarks concerning the fact that this group of discussants made an attempt to compare comprehension of both terms and argue that eating places run by McDonald's are restaurants. Supporters of the attitude opposing this attitude towards McDonald's brand (i.e. nostalgia) most frequently used the word "restaurant" and its inflected forms (again 15 times altogether), whereas the term "bar" and its inflected forms were used (again) 10 times altogether. These very facts may suggest that the groups of discussants were oriented more at direct confrontation of opinions.

At this point it is worth noticing that one of the Internet user's statement classified to the "acculturation" category was of historical nature. It directly referred to the moment of opening of the first McDonald's eating place in Warsaw and raised the aspect of social acceptance of the company's offer. However, in further part of the statement there was also a clue that, in principle, since McDonald's entered the Polish market doubt among Polish citizens has arisen regarding in what way eating places under the company's brand name should be classified. The excerpt from the statement illustrating the issue in question is presented here:

- Thread_6 [333-633], user - awonek:

"When I was there for the first time in 1992 and saw the sign inviting to the restaurant upstairs I thought there was a bar downstairs and a restaurant upstairs. I was surprised to find out afterwards that some customers would buy food downstairs and take their trays upstairs to the restaurant."



Source: Own work

Figure 2 Word cloud for the "acculturation" category

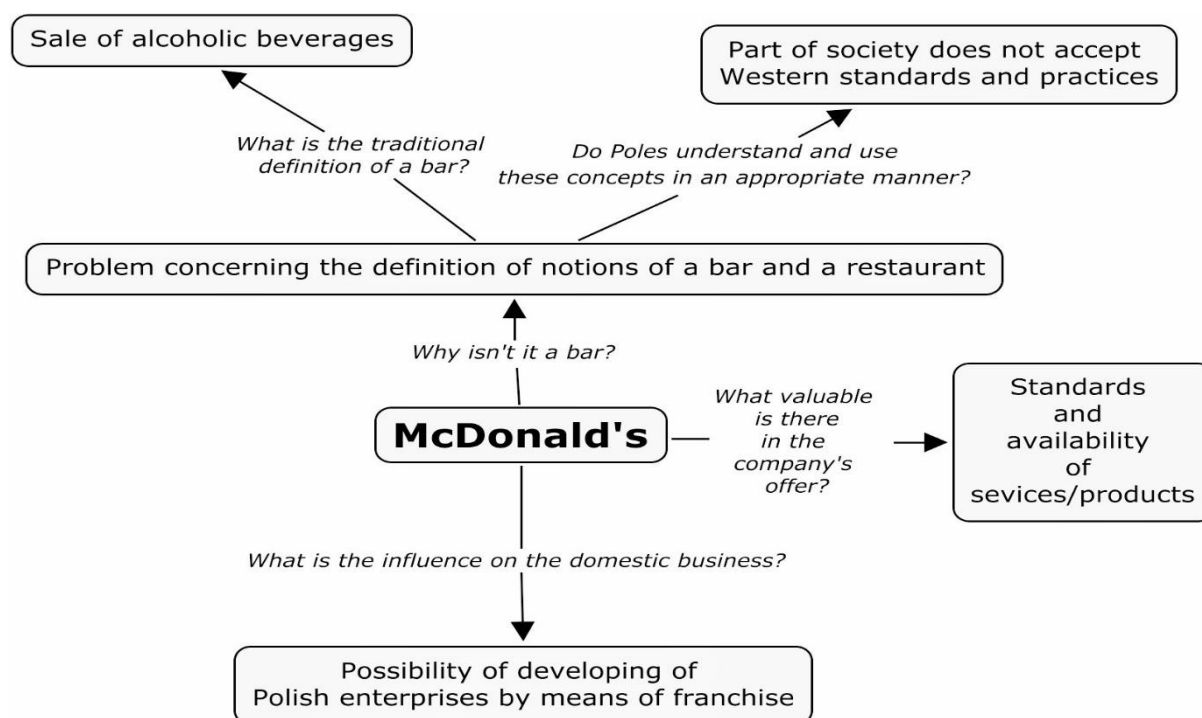


Source: Own work

Figure 3 Word cloud for the "nostalgia" category

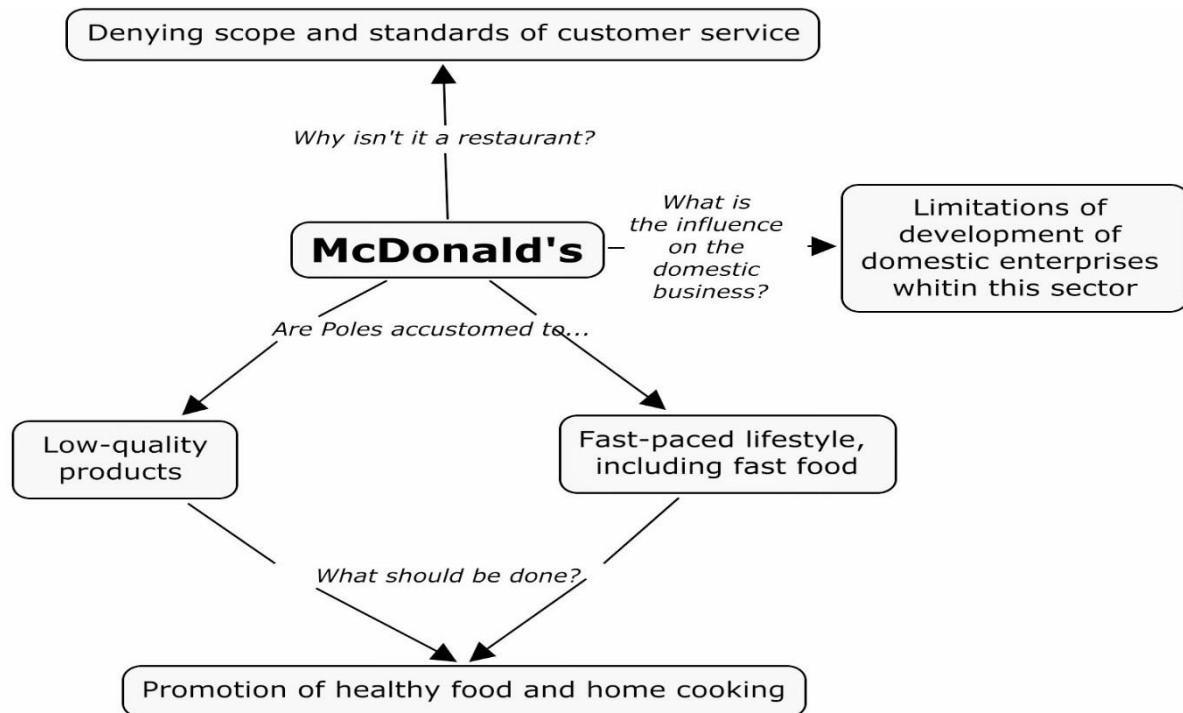
Other key terms used by the discussants representing both groups (apart from the name McDonald's which was equally often used by both groups again, i.e. 8 times) showing their attitude towards McDonald's brand name from the perspective of either nostalgia or acculturation were used several times at the most.

The analysis of content of the research threads points out also that the discussants could pass smoothly through particular issues. It is especially visible in case of the quality of meals served in McDonald's and ways of having one's meals (at home or eating out at an eating place). Basically, these threads were interchanging.



Source: Own work

Figure 4 The general scheme of the argument for the attitude of acculturation



Source: Own work

Figure 5 The general scheme of the argument for the attitude of nostalgia

The discussants within the framework of their attitude confronted views regarding high level of technological processing of McDonald's products and the need for eating traditional, healthy food (the attitude of nostalgia) with the commonness of access to the standardised offer of the enterprise around the world and preference for fast service at the eating places of this franchise chain (the attitude of acculturation). Supporters of traditional, local dishes indirectly implied that, following other countries, they expected development of chains of eating places offering that kind of food on the domestic market. Thus, these statements may as well be regarded as superficially connected with the issue of development of Polish business. In this matter the representatives of the attitude of acculturation, in turn, pointed out that running an eating place within the framework of McDonald's franchise chain may even be regarded as an opportunity for Polish entrepreneurs. Visualisation of the general outline of argumentation of the Internet users within groups expressing opposing attitudes towards McDonald's are shown in figures no 4 and 5.

The presented argumentation diagrams show the convictions lying behind the attitudes of acculturation and nostalgia expressed in the researched discussion on the Internet forum. Therefore, opposing arguments used by both parties should not come as a surprise. However, it is worth noticing that upon reading the content of the coded excerpts of the Internet users' statements one may have an impression that persons expressing the attitude of nostalgia would do that in a more emotional manner than persons representing the attitude of acculturation. This is manifested by the usage of personal references, addressing statements, often directly, to other participants of the discussion, as well as the usage of spiteful utterances towards McDonald's, its products and Internet users manifesting the attitude of acculturation as well.

5 Discussion

Although the tools for traditional strategic analysis recognise the sociocultural context of functioning of an enterprise, they consider it to be one of many dimensions of macro environment. Nowadays, it is being pointed out that the main force of macro environment of an enterprise is the sociocultural dimension represented by communities interpreted not only as social groups expressing active attitude but also as a defined system of values and the dimension within the framework of which an enterprise conducts its business activity. Thus, strategic management in the planning sphere faces a challenge of taking into account the sociocultural context, its complexity, and what is essential, also its dynamics and active role in the evaluation of an enterprise and values it represents (Kukalis, 2009).

The analysis of McDonald's as a cultural brand from the perspective of the attitudes of nostalgia and acculturation presented in the article helps to realise that the sociocultural context actually actively assesses the activity of enterprises as well as particular products/services. Simultaneously, it should be emphasized that from the postmodern perspective there is no strict boundary line between particular terms/phenomena.

In case of a cultural brand the object of cultural entangling may be the product itself, a group of products or the enterprise itself. Opinions regarding these objects may also be connected with general social and economic processes in the world or in a given local corner of the globe. Even if the majority of society recklessly expresses their opinion about a problem it does not mean that their argumentation and convictions are the same. The reason for that may be, *inter alia*, the effect of closeness between a personal attitude, opinions and what is offered by, among other things, the market of consumption goods. Nowadays, this effect is frequently surprising, which means that it may even occur in spite of the fact that everything points at the discrepancy between what is represented by a product for example and customer's expectations and values. Nevertheless, a single fact, a single aspect of the product or expressed convictions may lead to breaking of this distance (Welsch, 1999).

The established fragmentation of the sociocultural context serves as an additional source of uncertainty for the functioning of enterprises, however, simultaneously, it seems that it might also be the source of market success. It is so, among other things, when information about a brand/product does not only reach a selected target group (Wursten & Fadrhonic, 2012). The success may be based on appropriate recognition of the network of views, attitudes and actions taken by consumers. Thus the sociocultural context gains significance which is strategic for an enterprise. However, the prospective analysis of the context as well as strategic planning undertaken on its basis should be based on the assumption that sociocultural environment itself conducts the analysis of the market or a company's offer as well. Therefore, from the postmodern perspective there is a situation in which both parties (enterprises and consumers) conduct mutual analyses that is they are active within built and sustained relations. In case of McDonald's, problems which the company had to face while entering the Chinese market may be pointed out. First of all, what may be pointed out are the attempts to implement traditional Chinese dishes/traditional food products as fast food (the aim of which is to overcome reluctance of a great part of the Chinese society to the company and its offer themselves) or the necessity to train Chinese customers within the scope of how McDonald's services, McDrive in particular, should be used (CNBC, 2007). This example shows that the problem of making use of the contemporary sociocultural context within the framework of strategic management processes is a tough challenge requiring the use of approach which combines both globalisation in a traditional sense, as well as the so called localisation (Svensson, 2001).

The conducted analysis of attitudes of the Polish Internet users towards McDonald's shows that even in Poland, a European country, whose cultural conditionings do not differ dramatically from the American ones (what is more, where everything of American origin is favourably responded to), diametrically opposite assessments of the brand exist.

It appears that the request that McDonald's operating on the Polish market approach drawing up and implementing of glocalisation strategy in Poland in a significantly more versatile manner, relying not only on strictly marketing activities, may be deemed justified. In Poland (next to adverts of products) promotion campaigns presenting McDonald's as an attractive workplace for young people are known (the campaign could be treated as an attempt to fight against common belief, according to which the company takes advantage of young and inexperienced employees). Another stage of this promotional action were spots showing McDonald's as an enterprise which enables young people to get promoted fast and to occupy managerial positions. In this case, it may be acknowledged that McDonald's tried to present itself as a socially-involved enterprise, since there is youth unemployment problem in Poland as well as badly-paid, dead-end positions on which they may possibly be employed. With regard to problems established in the analysis of the record of the Internet discussion, McDonald's in Poland made an attempt to deal with the issue of quality of products and materials used for the purpose of their production. However, it again took the form of advertising spots. This way of making an attempt to influence the sociocultural context does not seem to suffice. Firstly, broadcasting of advertising spots is usually a one-time action, the realisation of which is phased within a certain time bracket. Secondly, the opponents of McDonald's products and brand name immediately treat these spots as an opportunity to hold a parallel discussion (especially using social networking websites in a broad sense for this purpose). Therefore, it seems that failing to recognize the conditionings of diversity of the context of attitudes, judgements and values behind the assesment of a cultural brand which the company is and lack of long-term connection of company's business activity with this context with the use of adequate tools of (re)action may become the source of market turbulences which will be used by present or future competition.

It is worth highlighting that attempts to communicate with customers in Poland face the issue of features of Polish national culture. As the results of research concerning national cultures based on G. Hofstede's method point out (values for six dimensions of culture), Poles in the cultural sphere are characterized by substantial contradiction. On the one hand, they accept hierarchical relationships, have emotional need for the existence of principles and are not open to non-standard actions and way of thinking. On the other hand, however, Poles constitute a society of individualists who tend to be cynics, pessimists and think that social norms limit them. It is emphasized that this contradiction within the features of national culture makes relationships with Poles very delicate, but if properly built and sustained they may turn out to be very fruitful (The Hofstede Centre, 2015).

Conclusion

The results of the conducted analysis of the Internet users' discussion concerning McDonald's in Poland show that there are two opposing attitudes towards the brand, i.e. acculturation and nostalgia, present in the opinions expressed by them. The fact shows the presence of phenomena characteristic for the postmodern era in the opinions expressed by this group of respondents. Therefore, the research results emphasize the fact that McDonald's as an enterprise operating on a global scale is entangled in the local cultural context. The context became the ground for consumers' self-definition and expression of personal attitudes ranging from full acceptance to full rejection of what is offered by a classically defined globalisation (in this case: this particular enterprise interpreted as a cultural brand).

Therefore, McDonald's in Poland as well as in other parts of the world needs to face problems of the active consumer role and increasing role of the sociocultural context in both strategic planning and implementation of the assumed development strategies (also in countries with similar frame of the sociocultural context). Thus, it seems that one of the most vital challenges for contemporary company management in the context of increasing internationalisation of business activity is also to find ways of dealing with local (not only global) complexity and variability of how consumers understand what the enterprise represents and offers.

Taking into consideration the features of national culture, it may be, in accordance with recommendations in the commentary to cultural contradictions occurring in Poland (The Hofstede Centre, 2015), expected that in this country McDonald's, apart from introducing formal and official principles of communication with consumers, concurrently made informal relations. Such activities based on individualisation of creation and sustaining of relations would become a valuable addition to official ways of communication and would probably enable to create among Polish consumers the conviction that every customer matters for the enterprise.

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Intellectual capital investments: Company's additional expenditures or creating shared value?

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Abstract

Purpose of the article The authors describe theoretical approaches and researches of intellectual capital investments and present their analysis of the role of the intellectual capital investments for company's sustainable performance. Deeper analysis of the concepts will help to clarify understanding if intellectual capital investments are company's additional expenditures or a tool for creating shared value.

Methodology/methods The following qualitative and quantitative research methods were used: literature review, logical and comparative analysis, deductive method to interpret the general information, the statistical method to group information and to analyze the different regularities, the empirical method to obtain information by conducting a survey, and induction method to interpret and generalize the survey results.

Scientific aim Scientific aim of the paper is to analyze and assess role of intellectual capital investments for a company and interrelation with the concept of creating shared value.

Findings On the one hand, intellectual capital investments in scientific literature are defined as expenditures, but on the other hand - these expenditures provide different benefits (monetary and non-monetary) for company and value for stakeholders. Therefore the concept of intellectual capital investments is connected to the concept of creating shared value and the concept of stakeholders. According to these concepts creating shared value provides benefits for different groups (stakeholders) and as a result sustainable growth for the company.

Conclusions It is difficult to increase the amount of intellectual capital investments if the company's owner does not understand the importance of sustainable strategy. The state and other stakeholders can create most favorable conditions for sustainable development, but it cannot be effective without motivation and understanding of what is the business expectations. It means that motivation and values of each stakeholder are the main factor for creating shared value and company's sustainable performance.

Keywords: intellectual capital, investments, expenditures, creating shared value, stakeholders

JEL Classification: M14, O34, L26

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Introduction

The role of intellectual capital has increased during last years, but there is no unique approach to understanding the concept of the intellectual capital. The approach to this concept is changed due to dynamic environment and factors influencing company's performance. In the end of 20th century intellectual capital was considered as an important resource, which can be used for production. Researchers have used different comprehensions for the intellectual capital: „intangible assets”, „invisible assets”, „intangible resources” etc. (Barney, 2001; Hall, 1992, 1993; Itami, Roehl, 1987). Later researchers defined the concept of intellectual capital as capital meaning with its ability to earn (Petty, Guthrie, 2000). At the present time the concept of intellectual capital is closely connected with the concept of knowledge and knowledge management. „When knowledge is analyzed from a value creation perspective, it is considered as intellectual capital. Intellectual capital is comprises the valuable knowledge-based resources and the management activities related to them” (Kianto et al., 2013).

Nowadays new management methods and strategies are needed and resource quality is one of the main factors influencing company's performance. Intellectual capital could provide sustainable competitive advantage for a company if certain conditions are fulfilled. For intellectual capital creation, accumulation, implementation at company a certain amount of intellectual capital investments is needed. There is no common opinion about the concept of intellectual capital investments and possible influence on company's performance for entrepreneurs. Most of them invest if they see clear financial benefits from investments. They do not go deep into the analysis about possible non-financial benefits from investments. Therefore, the interrelations between intellectual capital investments and company non-financial performance and creating shared value are not clear.

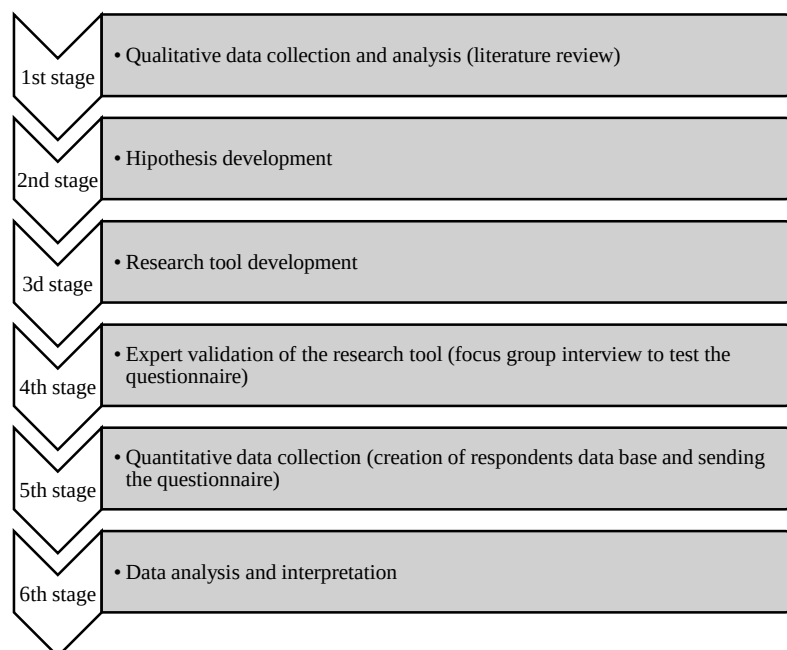
The aim of the paper is to analyze and assess the role of intellectual capital investments for a company and interrelation with the concept of creating shared value. The following qualitative and quantitative research methods have been used: literature review, logical and comparative analysis, deductive method to interpret the general information and link it to specific cases, the statistical method to group information and to analyze different regularities, the empirical method to obtain information by conducting a survey, and induction method to interpret and generalize the survey results.

1 Methodology of research

The main questions of research are:

- 1) How Latvian entrepreneurs understand the concept of intellectual capital investments?
- 2) What is the main outcome from the investments for Latvian entrepreneurs?

The general research structure is described below (Figure 1).



Source: created by the authors

Figure 1 Research scheme

To achieve the research aim the following tasks are determined:

- 1) to define the concept of intellectual capital investments and outcomes;
- 2) to develop a questionnaire for entrepreneurs;
- 3) to create a data base of respondents;
- 4) to collect a data and interpret results.

Due to theoretical background and previous studies done by the authors, the following hypothesis is defined: the Latvian entrepreneurs have a narrow view about the concept of intellectual capital investments and they invest, if financial benefits are possible as an investments outcome.

Several limitations are determined for the current research:

- 1) the relationship between intellectual capital investments and creating shared value is studied at company level;
- 2) intellectual capital investments' financial side (questions/problems) has not been analysed in the research.

The authors select a questionnaire as a research tool for achieving the research aim. The questionnaire consists of a three sections.

Section A: Respondent profile. The authors used some criteria for respondents. The main criteria are: the sector of national economy; number of employees.

Section B: Statements about the definition of the concept of intellectual capital investments

Section C: Statements about outcomes investments.

To evaluate each statement, respondents will be offered to use Lykert type scale. The opportunities for evaluation will be: not important, relatively important, important and very important.

The respondents' data base is created on the basis of the Business Efficiency Association in Latvia, which are the leading organization uniting professionals from various industries to increase business efficiency in Latvia.

2 The Concept of Intellectual Capital Investments

There is no unique approach for intellectual capital investments definition. Different researchers suggest various interpretations of intellectual capital investments definition. Most of them define intellectual capital investments as different kinds of expenditures or costs, for example, advertising expenditures, R&D expenditures, labor costs etc. This approach is used because these expenditures are easy to identify and they can be measured using enterprise accountancy information and statistical data. Sometimes expenditures and intellectual capital investments are used as synonyms. But the previous study done by the authors about the concept of intellectual capital investments shows that investments and expenditures are not synonyms (Lentjushenkova & Lapina, 2014). Some researchers suggest comprehensions for intellectual capital investments, which combine financial and non-financial aspects. Many of these comprehensions include company value creation and competitive advantages creation aspects (Table 1).

Table 1 The interpretations of the definition of the intellectual capital investments (some examples)

Authors	The interpretations of the definition of the intellectual capital investments
De Carolis & Deeds (1999)	R&D expenditures enhance a firm's knowledge stock through the flow of new scientific knowledge that is created (e.g., new patents and licenses).
Klock & Megna (2000)	Advertising expenditures are used as a measurement for the intellectual capital investments. These expenditures have positive impact on a firm's Tobbin Q and systematically influence market value.
Lev (2000)	Innovation is created by investments in intangibles. When such investments are commercially successful, and protected by patents, they are transformed into tangible asset creating corporate value and growth. Investments are described as intangible activities (dynamic notion). They imply an allocation of resources aimed at:
Meritum project (2001)	1) developing internally or acquiring new intangible resources; 2) increasing the value of existing ones; 3) evaluating and monitoring the results of the former two activities.
Corrado et.al. (2005, 2006, 2012)	Intellectual capital investments are defined as intangible activities for strategic aim achieving at the enterprise. New product development expenditures are considered as a part of intellectual capital investments.
Coombs & Bierly (2006)	R&D expenditures have a systematic influence on firm's market value.
Piekkola (2011)	An enterprise' capital formation expenditures.
Boujelben (2011)	Investments in R&D, quality, and advertising may affect future cash flows from operations. Investing in training and software acquisition does not affect the future firm's ability to generate cash flows.
Molodchik et.al. (2012)	Intellectual capital investments are an intellectual capital part, which a company invests in order to gain competitive advantage and to improve performance which then causes an increase in company value.
Lentjushenkova & Lapina (2015)	The intellectual capital investments are expenditures in different intangible assets (software, brand, loyalty programs, routines and processes etc.) and human resources of the enterprise for its financial and non-financial performance.

Source: created by the authors

An investment in the intellectual capital is focused on the intellectual capital creation. The process is oriented on future benefits creation for achievement of enterprise's goal (Gaponenko & Orlova, 2008). Many researchers analyze the intellectual capital investments as drivers for financial performance at the enterprise. The definition of "investment" is focused on the financial performance, but intellectual capital investments could be also drivers for non-financial performance, such as productivity, quality improvement etc. The non-financial performance could be incentive for financial performance, because of the interaction between intellectual capital components influences effectiveness of the investments (Lentjushenkova & Lapina, 2014). The focus on the financial benefits from intellectual capital investments is close to the decision making process. Most of entrepreneurs make their decision on the basis of clear forecasts about the rate of returns. Intellectual capital investments are risky, because of several reasons, and the main reason is that the investments' object very often is not the entrepreneurs' property. For example, employee's training costs are one of the intellectual capital investments, but some entrepreneurs do not invest in training, because they are not sure in possible returns of the investments.

The amount of intellectual capital investments depends on company's strategic goals and the amount of available intellectual capital at the company. The authors divide intellectual capital investments into three groups: creation investments, maintaining investments and development investments. Depending on company's goal and amount of accumulated intellectual capital at the company, certain kind of investments is needed.

Making investment decision, the company has to set its goal and assess if the amount of necessary resources is enough. For example, enterprises are not capable to develop R&D activities if they do not have employees and equipment for it. It means, they must create initial intellectual capital for further development, or make intellectual capital creation investments. If companies have qualified employees, they have to think about their qualification level and keep employees' skills and knowledge at a certain level or make maintaining investments. These investments are also necessary for saving the company competitiveness.

The intellectual capital investments' outcomes and benefits are received not only by the company, but also by its stakeholders (Table 2).

Table 2 Intellectual capital (IC) investments outcomes for stakeholders

Stakeholders	IC investments outcomes
Owners	Profit, reputation, personal growth, company's value growth, market share growth
Employees	Professional qualifications growth and experience, higher salaries, higher positions, better working conditions
Customers	Better product and service quality, lower prices
Partners	Lower costs, time and resources savings, competitiveness, reputation
Society	Higher lever of welfare, higher labor force quality, productivity

Source: created by the authors

Most of these outcomes provide non-financial benefits (reputation, product quality etc.) and increase an opportunity for the company to get financial benefits (profit, company's value etc.) in future. Therefore, it can be concluded that the concept of intellectual capital investments is connected with the concept of creating shared value.

3 The Concept of Creating Shared Value

Last years companies and their managers try to find an effective way to sustainable growth because of several reasons, such as economic crisis, unemployment, productivity reduction, demand reduction etc. Previous strategies and management methods cannot provide desired results. Managers and researchers have understood that a value creation process is more complicated and broader; and there are some participants, who and whose interests are not taken into account.

The concept of creating shared value (CSV) is rather new. Porter and Kramer in 2009 used this term, and in 2011 they described main scope of CSV and its role in company sustainable growth. The concept of CSV can be defined as policies and practices that enhance the competitiveness of a company while simultaneously advancing the economic and social conditions in the communities in which it operates. Shared value creation is a way of re-connecting a company with the society it is embedded in, through identifying and expanding the connections between societal and economic progress (Porter & Kramer, 2011).

Nowadays successful company strategy is based on CSV. Companies work taking into account society interests and values. CSV is an investment in company sustainable competitiveness, achieving economic and social goals (Porter & Kramer, 2011). CSV implies company striving to create shared value in both environments – external and internal, and preferably along several dimensions. Yet tapping into every dimension is not goal itself. The aim is to create shared value, even just along one aspect. The specific areas of impact will depend on the company and its line of business – acting in areas that are most important for its business will yield best results (Lapina et al., 2012, 2013).

CSV is closely connected with stakeholder theory. Stakeholder is a group or person, which can influence or influence goal achieving process at a company (Freeman, 1984). Later the definition of stakeholder is supplemented by Clarkson (1995) and Jackson et al. (2009) as follows: stakeholder is group or person with certain interests, rights and/or property rights at company and its activities.

At the beginning Freeman et al. (2007) defined 11 stakeholders groups: owners, employees, customers, local community organizations, suppliers, competitors, government, media, special interest groups, consumer advocates, and environmentalists). Later developed the stakeholders map, he divided all stakeholders in two main groups:

- primary stakeholders: are those ultimately affected, either positively or negatively by an organization's actions (owners, society, clients, employees, suppliers)
- secondary stakeholders: are the 'intermediaries', that is, persons or organizations who are indirectly affected by an organization's actions (government, media, competitors, consumer advocates, and special interest groups).

Freeman used narrow and broad approach for stakeholder analysis. In narrow approach stakeholders are person or group has significant influence upon or importance within an organization.

Latvian Business Consultants Association divides stakeholders in following groups: owners, business partners, employees and their families, customers, society, government, media, non-governmental organizations, and trade unions.

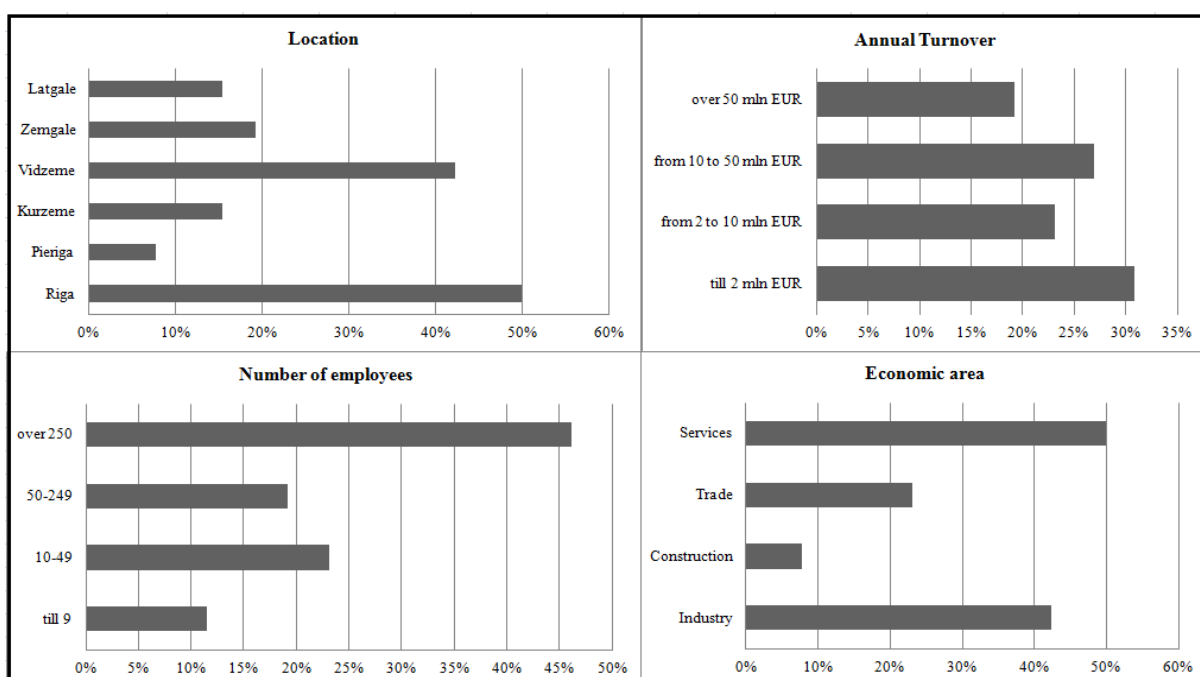
According to this theory, a company must develop a strategy which takes into account all stakeholders' values and interests. As a result the company can achieve sustainable growth.

4 Intellectual Capital Investments and Creating Shared Value: Case of Latvia

As mentioned above, the intellectual capital investments concept and CSV are connected. The authors conducted a research to disclose possible interrelations between the concepts and to disclose possible problems in understanding of the intellectual capital investments concept in business environment in Latvia. In previous studies done by the authors it is supposed that entrepreneurs in Latvia understand the concept of intellectual capital and intellectual capital investments in a narrow view and they invest, if financial benefits are possible as an investments outcome.

Questionnaire as a research tool was used. It was sent by e-mail to respondents: 33% of respondents filled the questionnaire. Respondents represent different economic areas and differ by size, number of employees and location (Figure 2):

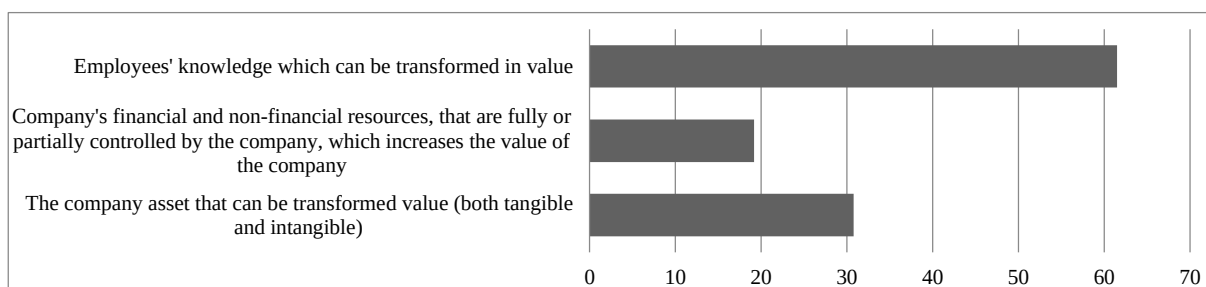
- most of respondents are located in Riga;
- most of respondents have a number of employees over 250;
- a big part of respondents operates in service area and industry;
- the number of respondents by annual turnover is similar in all four groups.



Source: created by authors

Figure 2 Respondents' profile

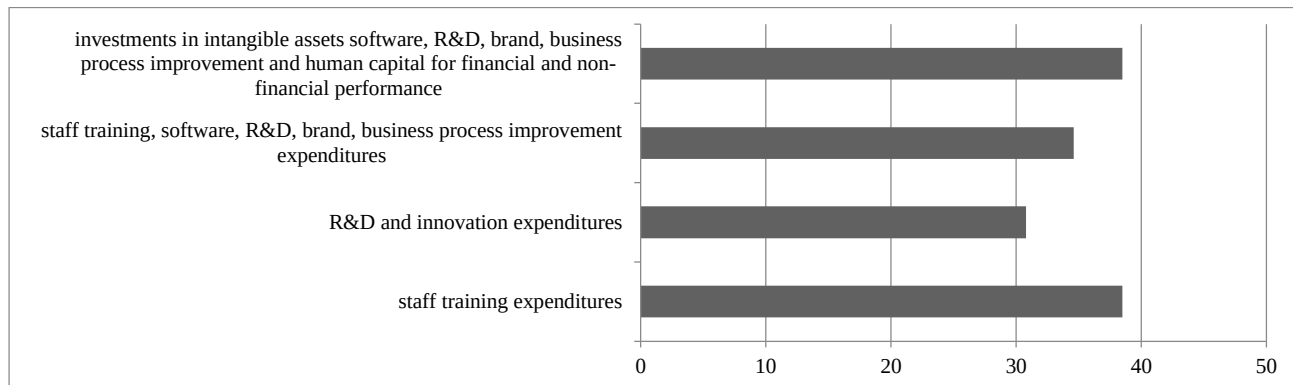
One of the current study tasks was to clarify how entrepreneurs determine intellectual capital. The results show that most of the respondents consider that intellectual capital is only the employee's knowledge. The authors suggest their own definition of the intellectual capital: the company asset that can be a transformed value (both tangible and intangible). This definition was accepted by 30.80% of respondents only.



Source: created by the authors

Figure 3 Respondents' statements about the definition of intellectual capital (%)

The authors offered the respondents to choose a definition of intellectual capital investments which is connected to the respondent's opinion about these investments.

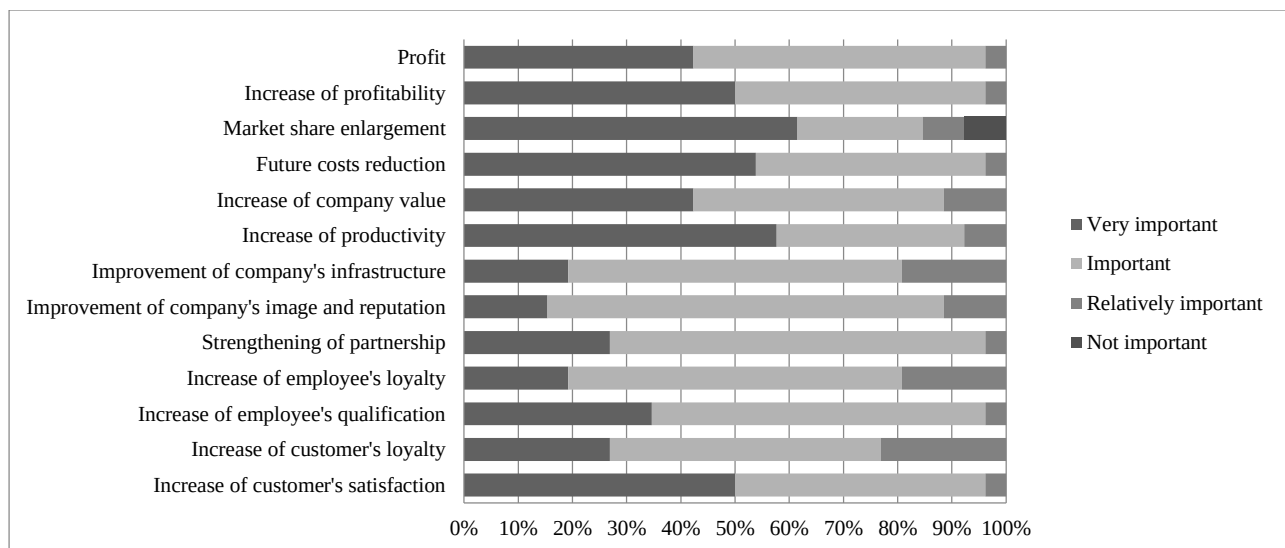


Source: created by the authors

Figure 4 Respondents statements about definition of intellectual capital investments (%)

The results show that a big part of respondents consider that intellectual capital investments are staff training expenditures or R&D and innovation expenditures (Figure 4). It can be concluded, that entrepreneurs associate intellectual capital investments with expenditures, not investments.

Developing the questionnaire, the authors define possible outcomes from intellectual capital investments according to financial and non-financial performance and concept of CSV. The following financial outcomes are defined: profit, increase of profitability, increase of productivity, enlargement of market share, increase of market share, future costs reduction. The main non-financial outcomes are: increase of customer's satisfaction, increase of customer's and employee's loyalty, increase of employee's qualification, strengthening of partnership, improvement of company infrastructure and company image and reputation.



Source: created by the authors

Figure 5 Respondents' statements about outcomes from intellectual capital investments

The results show that hypothesis is approved and entrepreneurs consider financial outcomes more important than non-financial outcomes (Figure 5). Entrepreneurs are more focused on their own outcomes than their stakeholders' outcomes from the investments (excluded customers). Customer satisfaction is only one outcome which is considered very important. The authors suppose that it can be explained with this outcome's interrelation with financial performance.

The main factors which explain survey results are that the CSV concept is rather new and entrepreneurs have not understood its principles and most of Latvian entrepreneurs must be concentrated on survival strategy because of economic situation and state politics in the country.

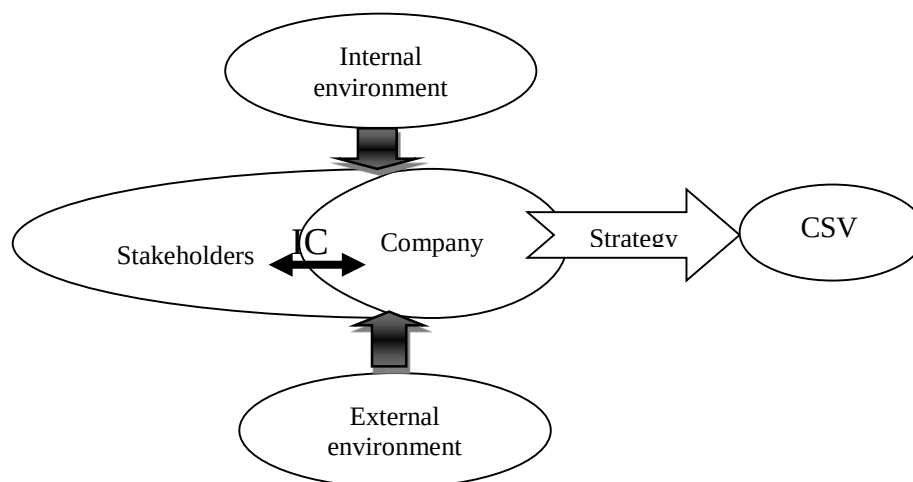
5 Intellectual Capital Investments and Company Strategy

Intellectual capital plays significant role in company's sustainable strategy development. Company needs to accumulate a certain intellectual capital for strategic goal accomplishment. It can be the intellectual capital owned by the company and the intellectual capital owned by the company's stakeholders.

One of the main tasks for a company is to attract stakeholders' intellectual capital and implement it in company strategy. In case of intellectual capital accumulation process at a company, intellectual capital can be considered as an investment: stakeholders take part in company activities with their intellectual capital (Figure 6). For example, an employee uses his/her competences at work. These competences are the employee's intellectual capital, which is invested in the company for the company goal accomplishment. On the other hand, the company organizes training, or gives an opportunity for "learning-by-doing" or "job-learning", sharing company's experience and knowledge. It increases the level of the employee's competences, but at the same time the additional expenditures are emerging at the company. These expenditures can be considered as the company's intellectual capital investments, which create value for both: for the employee (higher competence level, including new experience) and for the company (qualitative recourse (employee), bigger amount of intellectual capital etc.) and therefore CSV.

For sustainable growth a company needs to develop strategy, involving stakeholder's interests and values and using and implementing their intellectual capital. There are several conditions in internal and external environment, which is important for successful strategy development:

- company goal formulation and its disclosure for stakeholders;
- determination of stakeholders values (including comparison);
- motivation for cooperation and intellectual capital exchange;
- company's organizational culture level, which influences intellectual capital accumulation and sharing process at company;
- certain quality of intellectual capital for company goal achieving;
- certain amount of intellectual capital for company goal achieving;
- certain type and amount of intellectual capital investments.



Source: created by the authors

Figure 6 Interrelations among intellectual capital investments, company strategy and CSV

Taking into account the conditions mentioned, a company can develop a strategy, which important part is intellectual capital investments and CSV. This strategy will provide sustainable competitive advantage for a company and benefits for the company and stakeholders. It can be concluded that intellectual capital investments can be considered as a tool for CSV. 7

Conclusion

Companies can use one of three possible strategies as a response to environment change: they can change their strategies according to the changing environment, they can change anything or they can change the environment. Using intellectual capital investments as a tool for CSV is a new strategy development, which changes the environment in which the company operates.

Intellectual capital investments are not to be considered as the company's additional expenditures. But conducted survey results are the evidence that in Latvia these investments are considered as expenditures. It is a very narrow view. It can be explained by not clear understanding of the concept of intellectual capital and intellectual capital investments, but an additional research is needed for determining the specific factors. One of the reasons is the company's focus on financial performance and benefits for owners.

Despite of it, the interrelations between the intellectual capital and CSV are observed. It is approved by the survey results: most of entrepreneurs consider that customer satisfaction increase as investments outcome is very important. It means that companies must plan their activities including customers interests, who are one of the company's stakeholders. The strategy development taking into account stakeholders' interests is closely connected with CSV. Companies will need to accumulate intellectual capital, increase its amount by investments and attracting stakeholders' intellectual capital. The last can be considered as investments, because a stakeholder takes part in company's activities and invests it for company's goal achievement. Unfortunately, most of Latvian entrepreneurs think that other non-financial outcomes such as customer and employee loyalty, improvement of company's infrastructure and image, strengthening of partnership are less important. The authors can suppose that companies are mostly focused on themselves and their own interests than stakeholders' interests. It can be explained with business traditions and mentality, company organizational culture and economic and social situation in the country.

One of the most important factors influencing interrelations between intellectual capital investments and CSV is company's organization culture. Organizational culture determines relationship among employees, employers or owners, partners, customers etc., t.i. stakeholders. For effective intellectual capital exchange and sharing several conditions, such factors as, for example, motivation of stakeholders (especially co-workers and employers) to share their knowledge and experience, are taken into account.

The second important factor is stakeholder's value determination process. This process is complicated and most of Latvian companies cannot determine the stakeholder's values because of lack of financial resources and human resources. The entrepreneurs are interested to determine customers' needs and values, because they influence the future turnover and profit, but most of Latvian companies have no necessary resources for that.

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Integrative approaches for internationalization of small and medium-sized enterprises

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Abstract

Purpose of the article This present paper discusses the opportunities for internationalization of small and medium-sized enterprises (SMEs) through various approaches for integration. The main research thesis is that they are under-represented in the activities of this business.

Scientific aim The aim is to identify some integrative approaches to internationalization that are more suitable for Bulgarian SMEs. To achieve the objective, a study was conducted and the forms and level of internationalization of small and medium-sized business in Bulgaria were identified.

Methodology/methods The sources that were used include official statistics from the National Statistical Institute, the results of analytical reports on the European Union (EU) and a survey of 303 enterprises. The analysis and evaluation are based on statistical methods.

Findings The findings include identification of problems and opportunities for internationalization of the business through the implementation of integrative approaches.

Conclusions Based on the reviewed characteristics of inter-company alliances it can be concluded that as a form of integration, they are particularly suitable for the internationalization of SMEs.

Keywords: small and medium-sized enterprises (SMEs), internationalization, integrative approaches

JEL Classification: M16, F23

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Introduction

In an unpredictable dynamic and globalizing economy the internationalization of their activities is particularly important for Small and Medium-sized Enterprises (SMEs) due to the fact that "the globalization of markets opens up new business opportunities to internationalize entrepreneurial companies" and "opportunities in the global market can improve the performance of entrepreneurial activity, often far beyond what the company normally can achieve on the internal market" (Filipova, 2012). Internationalization allows them to develop in an international environment and to compete successfully in international markets. It contributes to economic stability and prosperity of the business. Internationalization has implications in terms of limited resources of small businesses and incentives to not only to them, but also to the national economy through the release of the foreign markets in different forms.

One of the main tasks set by the European Commission in connection with the development of small and medium enterprises in the European Union (EU) is encouraging them to benefit more from the opportunities offered by the common European market and rapidly growing markets outside it. Access to a wide common market of over 500 million consumers is essential for their development and fast growing markets offer untapped potential for many small businesses in the Community (Small business act for Europe, 2008). The document Small business act for Europe states: "A single market that works well will create a competitive environment to equip small and medium-sized enterprises to take better advantage of globalization" (Small business act for Europe, 2008), which is a prerequisite for their better functioning.

Recognizing the need to create conditions for the internationalization of small businesses the National Strategy of Bulgaria for the Promotion of Small and Medium-sized Enterprises 2014-2020 identified as important measures the increase of participation of Bulgarian companies in the sector of the European single market and in third country markets and the creation of technology partnerships based on Europe Enterprise Network (National Strategy for Small and Medium-sized Enterprises 2014-2020 – SBA, 2013).

Based on observations and studies we can formulate the thesis that small and medium-sized enterprises in Bulgaria are characterized by insufficient degree of internationalization and incomplete and inefficient use of all forms of its realization, including integrative approaches. This applies both for Bulgarian small and medium-sized enterprises and businesses in the European Union. Their international activities are confined mainly to export-import operations, which are also underdeveloped. In confirmation of this is the fact that 8% of small and medium-sized enterprises in the Member States report turnover from exports and only 12% realized the import of materials for production (Small business act for Europe, 2008). Internationalization of the Bulgarian enterprises is characterized by good performance in European Union markets and insufficiently developed activities in third markets. For example, the share of Bulgarian small and medium enterprises, which make imports from countries outside the European Union is 4% (Reference regarding the SBA for 2012 Bulgaria), while their share for European Union is 5% on average. The share of Bulgarian exporters from the small and medium-sized enterprises sector to non-European Union countries is 2% vs 3% EU average (Reference regarding the SBA for 2012 Bulgaria). These results indicate that small businesses are not fully using the capacities of foreign trade contacts. Simultaneously, the insufficient degree of internationalization is also reflected in the limited involvement in other forms, which can be seen from our observations. According to the European Commission's the main reasons for this are rooted in the scarcity of resources and lack of ability of small businesses to take risks in highly competitive markets. Serious problems are the lack of information on potential partners and markets as well as in the Member States of the European Union and in third countries; differences in the legal framework or legal environment, insufficient language skills and cultural barriers (Small business act for Europe, 2008).

One of the useful measures to strengthen international activity can be implementing various forms of international integration, enabling better advantage of global markets. These forms are a prerequisite for the effective development of relations with foreign partners, one of the means of acquiring knowledge and skills from them and of implementing the process of integration into the overall system of global economic relations.

Benefits of pooling of international business enterprises can be competitive growth, gaining more profit, extending the life cycle of the goods on the foreign market, sharing knowledge, skills and experience of human resources and others. Given the importance of international associations of enterprises, the objective of this paper is to bring out some more suitable integrative approaches to internationalization for Bulgarian small and medium enterprises.

1 Methodology of the study

To achieve the objective, a survey was conducted in 303 micro, small, medium and large enterprises. It was a sample one of representative character and includes the enterprises of different economic activities. The purpose of the survey is to identify what part of them carries international activities and what forms of internationalization are applied.

In the course of gathering information, representatives of their managerial bodies (owners and co-owners, directors, managers) were interviewed. Direct survey in which respondents themselves fill in the questionnaire was used as a data collection method. The survey results are based on the opinions of respondents, 117 (38.6%) of which are representatives of micro enterprises; 95 (31.4%) are small enterprises; 79 (26.0%) - medium and 12 (4.0%) - large enterprises.

The study was limited in time and place. It was conducted in 2014 and covers the activities of enterprises in Bulgaria. Official statistics from the National Statistical Institute and the results of analytical reports were also used. For the treatment of information statistical methods were employed - the observation method and the method of grouping, the method of analysis, graphical method, calculation of relative values. The data processing is performed using the SPSS for Windows.

For greater precision it is necessary to clarify that under Bulgarian law micro enterprises are considered the ones with up to 10 employees, an annual turnover of 3.9 million leva and value of assets up to 3.9 million leva; small businesses have up to 49 persons, an annual turnover of 19.5 million leva, asset value up to 19.5 million leva, while the medium ones - up to 249 employees, an annual turnover of 97.5 million leva, and asset value up to 84 million leva. An important condition for all companies is to be independent (Law on Small and Medium Enterprises, 1999).

2 Literature review

In the scientific literature, the problem of internationalization of business and small and medium business in particular is covered by a number of authors. They address the issue from different aspects. For example, Porter (2004, p. 91) reveals that in the conditions of internationalized competition in many industries not only large but also smaller companies can compete globally, with small and medium-sized companies taking a significant part of international trade, often focused on narrow segments or competing in relatively small industries and typically using strategies based on exports, with moderate direct foreign investment. At the same time he emphasizes that the limited resources of these companies face them with challenges in terms of gaining access to foreign markets, understanding the needs of foreign markets and the provision of after-sales service. These are problems which, according to him, are solved differently in different industries: by trading through agents or importers, distributors or trading companies, using industry associations to create a common market infrastructure, organizing trade exhibitions and fairs, conducting market studies; recently alliances of the smaller companies with foreign partners are commonly implemented, helping them to compete globally (Porter, 2004).

Holmlund, Kock and Vanyushyn state that the internationalization of different kinds of firms has been researched extensively since the late 1970s (Holmlund, Kock, Vanyushyn, 2007). In addition, some authors emphasize foreign market expansion and foreign entry modes (Cavusgil, 1980; Johanson, Vahlne, 1977; Johanson, Wiedersheim-Paul, 1975) and export performance and success (Beamish, Craig, McLellan, 1993; De Chiara, Minguzzi, 2002; Haahti, Madupu, Yavas, Babakus, 2005). Other authors research internationalization in terms of different forms and the impact of cooperative arrangements when doing business in foreign markets (Babakus, Yavas, Haahti, 2006; Coviello, McAuley, 1999) and so-called born-globals, i.e. firms that from or near their founding operate internationally (Knight, Cavusgil, 2004; Madsen, Servais, 1997; Oviatt, McDougall, 1994).

Pacitto (2006) defines internationalization as a process of performing operations internationally. Close in meaning is the definition that the internationalization of business is a contractual overseas operations and export of capital, which implies overseas research and production activity within the company (Boeva, Vassileva, 2010). Internationalization is considered a process of increasing participation in international operations abroad by Welch and Luostarinen (1988, pp. 34-64), as well as Coviello and McAuley (1999), Fletcher (2001; pp. 25-49), Liang and Parkhe (1997, pp. 495-530).

Dunning (1989) defined internationalization as the "totality of cross-border activities, whether related to the production or trade of assets, goods or services, and occur within the same institution or between independent economic agents". Other definitions point to internationalization as a factor for entering international markets (Lin, 2012). Avdokushin (2007, pp. 21) sees internationalization of business in the same vein, stating that international trade is the most developed form of international economic relations and international entrepreneurship. He believes that the identification of specific forms and methods of entering foreign markets is one of the most important elements in international business (Avdokushin, 2007). To traditional methods and forms of entering foreign markets Avdokushin (2007, pp. 210) refers the export of goods and services. According to him, in some cases, small and medium-sized companies create export associations to launch identical similar, related goods in foreign markets (Avdokushin, 2007).

According to Todorov (2011b, pp. 198) internationalization in inadequate internal market can be a major decision allowing the company to continue to develop. It helps to increase the opportunities for development and competitiveness of enterprises (Todorov, 2011b). At the same time he examined this phenomenon more widely and in many aspects. According to him internationalization it is not limited to the export of goods. Strategies for internationalization include forms of business cooperation such as export / import licensing, franchising, joint venture, establishment of foreign subsidiaries, outsourcing and others (Todorov, 2011b). His opinion is that cooperative deals involve a higher level of collaboration aimed at enhancing the competitiveness of the merged companies and the ability to create strategic partnerships in the future (Todorov, 2011b).

Sinyaeva, Zemlyak and Sinyaev consider internationalization in a similar way. To the forms of internationalization they include: foreign trade, joint ventures in the country and abroad, foreign enterprises in the country, international associations and organizations, leasing companies, cooperation of compensation based on subcontracting, attracting foreign labor, scientific and technical cooperation, trade licenses and technologies, international tourism and other forms

of international economic cooperation (markets, fairs, trade institutions, associations, etc.) (Sinyaeva, Zemlyak, Sinyaev, 2013). According to the same authors through the integration of enterprises in various forms of union are created conditions for the development and expansion of foreign economic complex of the country, which they defined as a set of undertakings, businesses, companies, corporations, joint ventures, foreign trade and other organizations from different producing industries and realizing export products, but also buying and processing import goods (Sinyaeva, Zemlyak, Sinyaev, 2013).

The literature focuses mainly on the international activities of major enterprises, especially multinational corporations having turnover of hundreds of billions of US dollars, with a significant number of companies abroad, and actively participating in the movement of goods, services, knowledge, capital and people (Boeva, Vassileva, 2010). In this regard the need to study the processes of internationalization in SMEs is emphasized, taking into account their specific distinguishing characteristics (Todorov, 2011b).

Some authors put focus on the factors and internationalization of business. Three different groups of factors are associated with this process. The first group includes general influencing factors - globalization, increasing global competition, the intensive development of communication and information technology, current regulatory standards and policies to attract foreign investment, the willingness of companies to meet the challenges in entering a foreign market, cultures, etc. (Kolev, 2008).

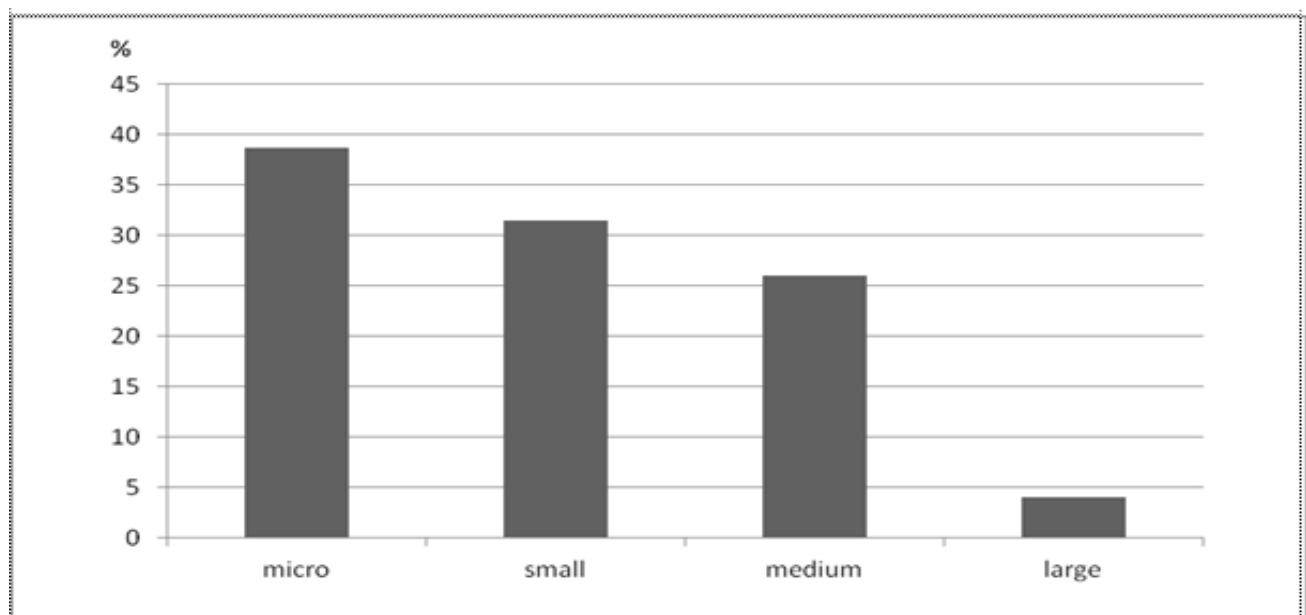
The second group focuses on the factors influencing the decision on the form and way for entering of enterprises in the foreign market: reasons for quick entering in the market, size of direct and indirect costs to enter the market, knowledge of the legal basis of entrepreneurship in the selected market risk in the country, the speed of the return cost and the predicted profit (Avdokushin, 2007).

The third group includes factors that lead to accelerated internationalization: the new market conditions, increased specialization requiring larger markets and rapid dissemination of innovation; technological development in the field of production, transport and communication; more complex capabilities of humans, i.e. more mobile employees and improve knowledge of foreign cultures and markets (Rasmussen, Servais and Madsen, 2000).

The problem of internationalization is also seen through the prism of management. In this sense, internationalization is defined as "the process of adapting the company's operations (strategy, structure, resources, etc.) to the international community" (Calof, Beamish, 1995) and indicates that it consists of both the changed outlook and changed positions.

3 Results

In connection with full and accurate disclosure of the problem we consider it necessary to analyze the profile of the companies that participated in our survey. The analysis can be performed in two ways: by size of enterprise and by the area of economic activity. Figure 1 makes it clear, that the majority of surveyed enterprises are micro and small enterprises.



Source: own research and author's calculations

Figure 1 Distribution of surveyed enterprises according to their size

Surveyed enterprises operate in different sectors of the production of goods and services and the largest number is in the field of furniture and clothing industry. Some of them operate in more than one area (Table 1).

Table 1 Distribution of companies according to the sphere of economic activity

Sphere of economic activity	Share of the total (%)			
	micro	small	medium	large
Furniture and clothing industries	11,1	21,1	34,2	41,7
Food industry	6,8	9,5	6,3	16,7
Mining industry (mines, quarries, timber)	7,7	5,3	2,5	-
Heavy industry (metallurgy, machine building)	-	2,1	5,1	-
Transport	2,6	6,3	-	-
Services	25,6	15,8	6,3	16,7
Construction	1,7	10,5	13,9	8,3
Trade	38,5	26,3	10,1	-
Tourism	4,3	3,2	2,5	-
Health care	2,6	-	5,1	8,3
Agriculture (farming and livestock)	2,6	3,2	2,5	-
Computer and information systems	2,6	-	-	-
Other	4,3	7,4	11,4	8,3

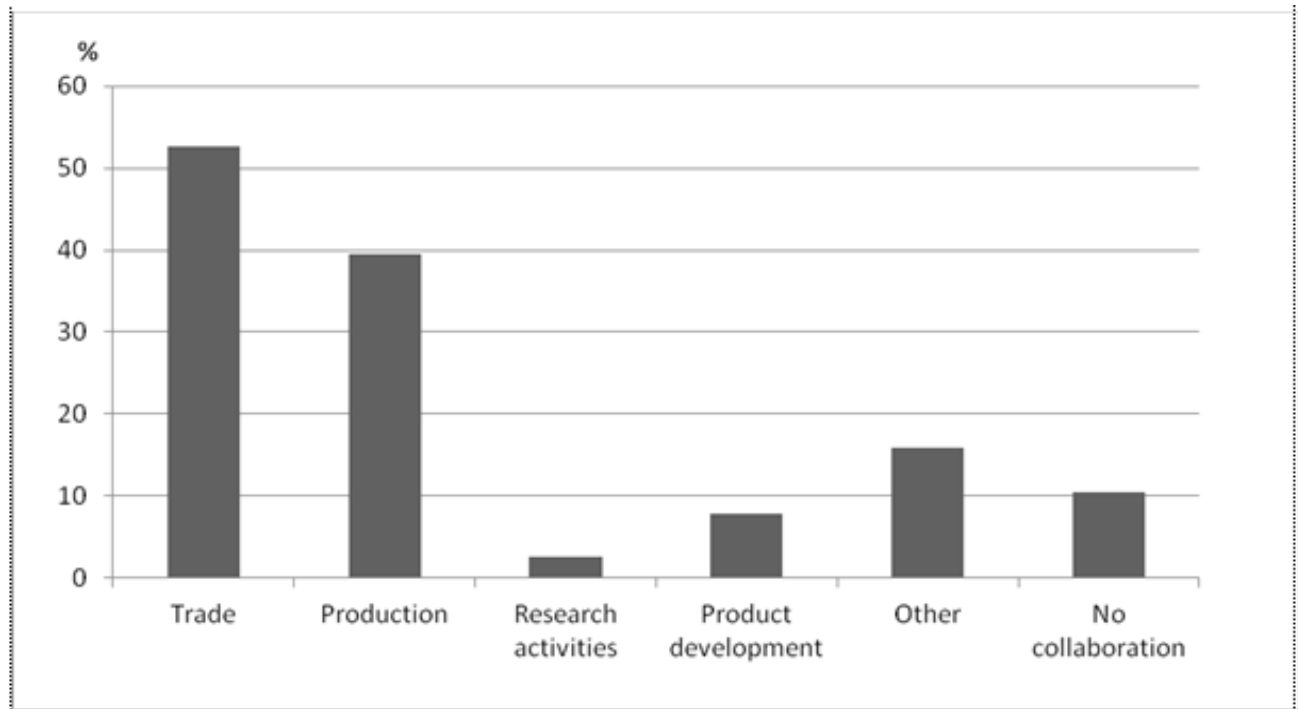
Source: Own research and author's calculations

Interesting is the distribution of various sized enterprises by field of activity. From the data in Table 1 it is seen that micro and small enterprises have a preference mainly to trade and services. Medium and large enterprises have the highest participation in the furniture and clothing industries. Along with this, there are some specific differences - for small businesses there is typical entry in activities such as furniture and clothing industry, for medium-sized enterprises - in construction and trade, while large - in the food industry and services. It is noteworthy that a certain, albeit a minor part of the studied micro-enterprises are aimed at high-tech activities - computer and information systems.

The study of internationalization of enterprises is carried out on the following main parameters: the presence of foreign partners; areas of cooperation with foreign partners and form of internationalization. With respect to these parameters the results of the conducted studies reveal the following:

1. With regard to the presence of foreign partners it was found out that it is insignificant in micro and small enterprises - only 2.6% of micro-enterprises, and only 8.4% of small enterprises. Significantly higher value of this indicator is seen in medium-sized enterprises - 22.8%. The biggest value of this indicator is in large enterprises - 58.3%. The remaining 7.9% have no foreign business partners.

2. Analysis of the areas of cooperation with foreign partners reveals that the most preferred are trade and production. Cooperation in research and development of new products, i.e. in innovation, which is an essential prerequisite for increasing the competitiveness of companies and the economy as a whole, is insufficient (Figure 2).



Source: Own research and author's calculations

Figure 2 Areas of collaboration with foreign partners

The study of forms of internationalization is also of interest. On the basis of the results it was found that the surveyed enterprises realized mainly export - import activity. Their strategies and development plans relate mainly with these activities.

Analysis of the results reveals that the biggest shares in export-import business are medium and large enterprises, while a significantly smaller share is the the export-import activity of micro enterprises (Table 2 and Table 3). There is a larger share of enterprises engaged in export activity. This indicates that these companies have good contacts and established positions in foreign markets and they realize the opportunities that are provided to them.

Table 2 Distribution of enterprises realizing export activity – shares in %

Export activity	Share of enterprises according to their size (%)			
	micro	small	medium	large
yes	14.5	35.8	57.0	58.3
no	85.5	64.2	43.0	41.7

Source: Own research and author's calculations

Table 3 Distribution of enterprises realizing import activity – shares in %

Import activity	Share of enterprises according to their size (%)			
	micro	small	medium	large
yes	13.7	24.2	51.9	41.7
no	86.3	75.8	48.1	58.3

Source: Own research and author's calculations

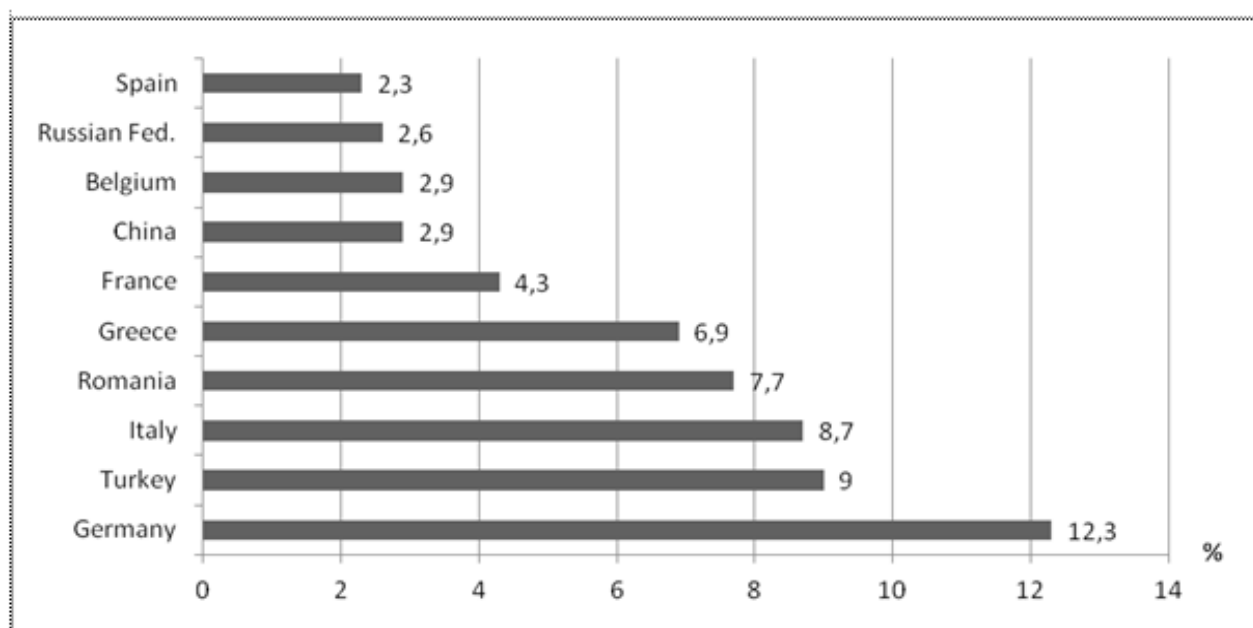
The number of countries outside the European Union in which the surveyed companies export their products is indicative of the state of export activity and positions in foreign markets. According to the survey the most significant proportion of businesses that sell goods on a single foreign market (24.0%).

Next rank those who export to three foreign markets (10.5%), 8.0% of enterprises export to two countries, and the remaining 6.0% are exporters at four and more than four countries. The study shows that only 3.0 percent of enterprises realized export to EU countries, and 6.3% - outside the EU. Essential shortcoming is the existence of companies which do not have export activities - 26.3%. It is evident that the performance of surveyed enterprises in markets outside the EU is weak. The results of our study to some extent overlap with the assessment of the internationalization of SMEs in a national survey conducted in 2013, according to which about 8.0% of Bulgarian companies export to countries outside the EU, while the value of this indicator for the EU as a whole is 25.0% (Vladimirov, Ganev, Simeonova-Ganeva, 2013).

According to the above cited national survey only 3.0% of micro-enterprises in Bulgaria exported own production abroad. The share for small businesses is 15.8%, and for the medium enterprises - 30.2% (Vladimirov, Ganev, Simeonova-Ganeva, 2013).

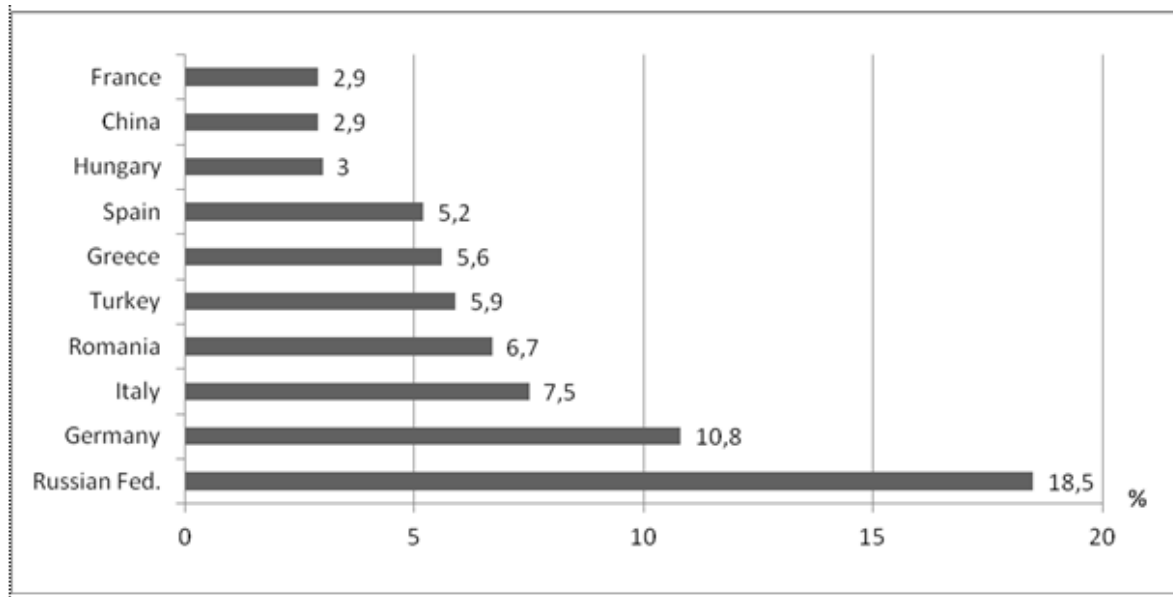
The analysis reveals that the increased in size company influences the enlargement of its export activities. Obviously, micro enterprises harder realize exports due to low capital and the limitations of other resources at their disposal. So their business is directed mainly to satisfying local market needs and based on that they have mainly regional importance.

The poor performance of Bulgarian enterprises on foreign markets is reflected in the position occupied by Bulgaria in the EU in the priority area Internationalization - in 2012 it is at 27th place and in the priority area Single Market – 13th place. The results of these studies and statistics show that the trade exchange of Bulgarian enterprises is mainly with EU countries (more than half of total trade - 60.8%) (National Statistical Institute, 2012). Ten countries rank among the most popular markets for export-import activity, seven of which are EU Member States (Figure 3 and Figure 4). Outside the EU the most developed foreign trade activity is with Turkey, China and Russia. Bulgarian firms are trading with neighboring countries (Turkey, Greece and Romania) and Serbia (exports - around 2.0%, imports - 1.0%) and the Former Yugoslav Republic of Macedonia (exports -1.6%, imports - 1.0) (National Statistical Institute, 2014).



Source: Statistical Reference Book, NSI, 2014, p.160

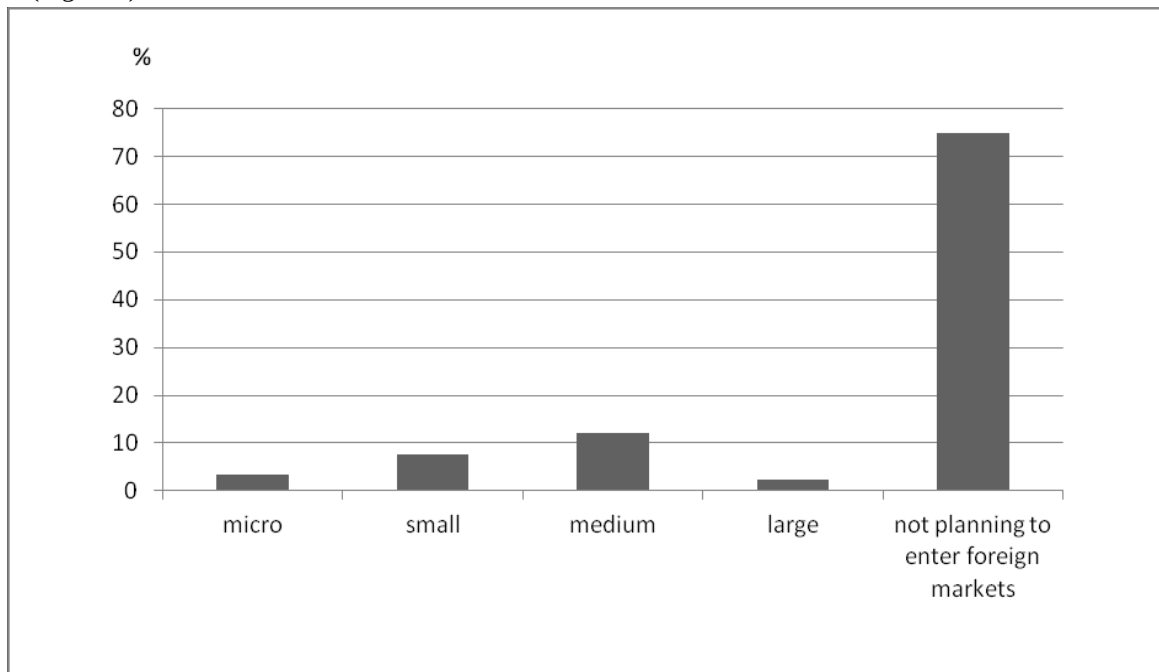
Figure 3 Exports to the top 10 Bulgarian trade partner countries in 2013 (Share of the total in %)



Source: Statistical Reference Book, NSI, 2014, p.162

Figure 4 Imports from the top 10 Bulgarian trade partner countries in 2013 (share of the total in %)

Our survey shows that in relation to the improvement of their export, part of businesses plan to expand their foreign markets, but they are only 25.2% of the total. Of these, 16.9% express intention to sell goods to markets in the EU and 8.3% - outside the EU. According to their size businesses planning expansion of the export activity is distributed as follows (Figure 5):



Source: Own research and author's calculations

Figure 5 Distribution of enterprises planning to expand their foreign markets

In our survey it was found that other forms of internationalization of the business are not covered – there is some participation in cross-border cluster initiatives (only 2.0%) and in the establishment of joint ventures with foreign partners (only 1.0%).

4 Discussions

As seen from the foregoing results, the studied SMEs use export-import operations as the main form of international business. Assessment of the foreign trade activity shows that this form is not applied effectively. The share of export of Bulgarian enterprises in the EU and beyond is small. We think this is due to the low competitiveness and uncertainty of enterprises that act as barriers to exit on foreign markets. At the same time markets in which export occurs are mainly EU countries and the nearby Balkan countries. Export is oriented mainly towards one or two countries, suggesting limitations in regional terms and in terms of quantity.

The analysis shows that not enough enterprises use integrative approaches to internationalization of the business. It is obvious that part of the enterprises apply cross-cluster initiatives and built joint ventures with foreign partners as a form of internationalization, but they are few compared to the total number of the surveyed enterprises. It should be noted that other integrative forms of internationalization are not applied.

The small share of enterprises that have a strategy and plan for international growth and expansion of markets can be pointed as a negative side and one of the reasons for delays in this area. Another reason for this can be the insufficient financial resources. This is also the conclusion of O'Farrell and Hitchens (1988), Rønning (1991), Christensen and Lindmark (1993) and Kaufmann (1994), who state that a major obstacle for SMEs engaging in international operations is generally limited resources.

The expansion of the forms of joint cooperation with foreign partners and application of integrative approaches contribute to easier entry in the foreign markets, introduction to commercial requirements, culture, customs and traditions of the countries concerned, and increases the opportunities for investment in the modernization of the production and innovation development, which are a prerequisite for increasing the competitiveness of the national and international markets (especially small businesses).

Given these positive aspects, we believe that Bulgarian SMEs to apply more actively different integrative approaches to internationalization of the business, through which they can respond appropriately to the new type of commercial relations imposed by the globalization of the economy. Business associations are an effective way for the successful positioning of enterprises and products and contribute to the realization of synergies in all business activities. As stated by Porter (Porter, 2004, p. 96), companies enter into alliances to derive a number of benefits, such as: economies of scale or learning, achieved by joining forces in marketing the production of components or assembly of specific models; gaining access to local markets, the necessary technology or meeting the requirements of local government property; dispersion of risk and modeling the nature of competition in the industry, for example by licensing of a given technology in order to facilitate standardization. In his opinion, the alliances can offset competitive disadvantages, whether in the form of factor cost or technology, safeguarding the independence and bypassing the need for expensive merger.

We believe approaches to merging firms such as strategic business networks, cross-border clusters, cross-company strategic alliances, joint ventures, research consortia, subcontracting, outsourcing and virtual organization can be particularly effective in modern terms. The effect of applying them in the process of internationalization of SMEs is determined by their characteristics and advantages that contribute to the development of business.

The argument for these and other integrative approaches to internationalization consist primarily in their essence. Some of their main features are summarized as follows:

- The strategic business networks are flexible structures that can be used for positioning of firms in strictly competitive positions (Jarilo, 1995). According to Todorov "the network as a higher form of the organizational design in its various dimensions" appears because the "traditional organizational structures and isolated companies can no longer cope with ever increasing competition and globalization of business activities" (Todorov, 2011a). Important features of business networks are the simultaneous cooperation and competition between the enterprises concerned and the opportunity for expression of the specific advantages of each participant. Relationships and connections between network participants are aimed at enhancing the competitive advantages and competitiveness of each of them, which facilitates the process of internationalization of business. Networks can include enterprises with interrelated or complementary procedures from different countries, and this extends opportunities for foreign markets.
- Cross-border clusters as a specific type of business networks built geographically can also be considered as a factor to support the process of internationalization of SMEs. Their creation in the border regions of neighboring countries is a prerequisite for strengthening and growth of individual companies, for regional development, as well as for cross-border exchanges of tangible and intangible resources necessary for business - raw materials, finished goods, ideas, information, knowledge and skills. Developed clusters realize synergies thanks to the strong bond between participants and better positioning of the companies and products.
- Strategic inter-company alliances are one of the network approaches characteristic of the tools of the new economy. They exhibit organizational, managerial and economic relations between two or more companies, which can be from different countries. These associations are the core of the overall strategy of participating the

business units. The use of strategic inter-company alliances as an approach to the internationalization of SMEs is a prerequisite for business support based on continuous interchange of resources, including human, technologies, customers, equipment, for creating and launching new competitive products, and international rollouts. Participation in them leads to benefits such as creating opportunities to improve production facilities, optimizing the distribution network, improving the competitive position resulting from the adaptation of leading management techniques and experience, reducing the risk in entering new markets, search for the most beneficial option in terms of production and sales of products related to the cost of resources and the size of the markets, and others.

- The joint venture is an agreement of enterprises carrying out joint research, production, marketing and other activities. It creates conditions for the spread of information technology. Preserving its legal independence, enterprises start a new independent structure. Participation of foreign enterprises in this structure is a prerequisite for the deployment of their capacity. Pooling of assets of enterprises increases the opportunities for small businesses in the field of investment and innovation in new products and technologies, the production of competitive products and their realization in foreign markets.
- Research consortia according to their nature involve integration of organizations in both the country and from different countries, who intend to implement a joint research project. The project implementation is related to the sharing of investment required and the risk of possible market and financial failure. Participation of SMEs in this form of internationalization supports their research and development activity and contributes to effective implementation of their innovation intentions.
- Subcontracting is a form of an inter-company alliance, which can help internationalization of small and medium business. Through this approach the efforts of enterprises of the country and from different countries are integrated. It contributes to the development of cooperative relations between them based on contract for a particular job. The effective implementation of the relationship between contractors and subcontractors shall add value in the production chain and strengthen the specialization in the production process. Benefits for small businesses, which in this context are subcontractors, consist in the fact that they are provided by the contractor with the necessary material resources, with technological know-how, knowledge, skills and requirements for production, and the market for production.
- Outsourcing (outsourcing - Outside Resource Using) is a modern approach for granting of rights to another entity for organization and management of the company activity, which has a special place in international markets. The applications of the outsourcing partnerships are determined by the development of information and communication technologies, which enable the development of business partnership in an international environment. Small businesses could benefit from the market expansion of outsourcing services, which is associated with the customer (outsourced company) to reduce and optimize the activities of personnel or implement complex projects associated with the application of technological knowledge, which is not within the competence of the company. Outsourcing leads to further specialization and export, respectively import of specific knowledge and skills.
- Within the global market under the influence of the rapid development of modern technologies for the internationalization of business is supported by the integration of businesses in the form of virtual organization. The essence of this kind of unity are the established information and communication systems between the partners that help increase the efficiency in the implementation of joint projects, as well as coordination and collaboration. Participating in a virtual organization SMEs can gain a competitive advantage based on specialized information systems, information exchange and communication between the companies.

The presented characteristics of these forms show that they are an effective tool for internationalization of the activities of all categories of companies from all fields of economic activity. So being familiar with them enables entrepreneurial businesses to use them in a more active and effective way.

Conclusion

Analyses of the results of our studies prove the raised thesis that integrative approaches are not sufficiently addressed in the internationalization of SMEs in Bulgaria. Among the main reasons for this we can mention: lack of confidence of businesses in their forces and capabilities; insufficient external competitiveness; small share of enterprises realizing strategies and plans for internationalization; predominant number of micro-enterprises for which it is more difficult to achieve international activity compared to others and insufficient financial resources; ignorance on the part of businesses of the forms and the opportunities they provide for the internationalization of the activity; lack of trust in other businesses, with which could integrate; difficulties in changing the status quo as a replacement older forms of competitive advantage with new, based on the application of integrative approaches require significant organizational, managerial and resource efforts.

It is obvious that it is necessary to expand the areas and forms of joint cooperation with foreign partners and use them more effectively as a prerequisite for overcoming the backwardness of the country from other Member States of the European Union in the priority areas Internationalization and Single Market and to increase the share of small businesses in the process of internationalization.

Based on the reviewed characteristics of inter-company alliances it can be concluded that as a form of integration, they are particularly suitable for the internationalization of SMEs. Their application in Bulgarian small business will expand and enrich its growth opportunities for creating sustainable competitive advantages, for their development in the international environment and effective performance in international markets.

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Implementing lean production: Application of Little's law

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Abstract

Purpose of the article Lean production is a well-known, popular and necessary strategy for companies of how to improve performance, financial indicators and position on the market. It was developed in Toyota in the second half of 20th century and this philosophy has been successfully implemented by a lot of companies. There is no doubt about its competitive advantage for companies. But still, there are lots of companies, which weren't successful in the implementation or which haven't done it yet. That is because every company is unique and there is no clear methodology of how to become lean company.

Methodology/methods We used the method of secondary data collection from the papers focused on lean production and qualitative research.

Scientific aim This article focuses on possible reasons, why it is so difficult to become lean company and why copying Toyota's production system or that of other successful implementers' failed in many companies.

Findings In many papers we found that lean production is associated with tools such as 5S, kanban, pull, total productive maintenance and others. We think that lean production is about reducing costs of buffers, where work in process is one of the most important buffers. Previously mentioned tools should help achieve this goal. We think that reducing buffers is not a tool, but a purpose of how to achieve higher performance. High level of buffers hides wastes and ineffectiveness of the system.

Conclusions This article doesn't define general methodology of how to implement lean production, but we want to present a few ideas, which we think could help companies with successful implementation of lean production, and which we want to focus in more depth in our future research of implementing lean production.

Keywords: lean production, cost of buffers, improving performance, company strategy, efficiency

JEL Classification: M11

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Introduction

We are in the 21st century and benefits of implementing lean production are more than obvious. Companies can dramatically improve their performance by embracing the lean production approach (Yang et al., 2012). In 2008 Toyota surpassed General Motors in global car sales (Bunkley, 2009). Thanks to the great success of Toyota, its production system is famous worldwide and is often regarded as the gold standard of modern operations and supply chain management (e.g., Guinipero et al., 2005; Goldsby et al., 2006). That's why many other companies have tried to copy the Toyota Production System (TPS). Some of them were successful and they became members of a constantly growing group of lean companies. Others have failed and there are still a lot of companies that haven't tried implementing lean production. Maybe, because they don't know what the right approach is.

But why is that? Lean production was developed more than 50 years ago and its principles are now well known. Lots of people have studied Toyota and its production system. Many papers and books have been written. Lots of companies implemented lean production which consequently improved their performance. What did the unsuccessful companies do wrong? Finding an answer to this question could help companies find the right way of how to implement lean production and to prevent making wrong decisions during this process.

This is what we want to focus on in this article. Firstly, we would like to present short literature review about today's main definitions of lean production. Secondly, we will focus on the ways of measuring the level of implementation. Then we would like to present our point of view on the definition of lean production and main ideas that we think companies should consider during the process. Lastly, we will be discussing our findings and potentials for future researches.

1 Literature review

The popularity of this topic is seen on an enormous number of papers, which are connected with lean production. Firstly let's focus on definitions of lean production. After studying papers we found that there are a few basic definitions, which are mentioned repeatedly: Lean production is an integrated socio-technical system whose main objective is to eliminate waste by concurrently reducing or minimizing supplier, customer, and internal variability (Shah, Ward, 2007); Lean production can be described as the elimination of waste (Liker, 2004); Lean production is a strategy or philosophy that promotes the use of practices, such as kanban, total quality management and just-in-time, to minimize waste and enhance firm performance (Womack et al., 1990) or lean production is a manufacturing strategy, which strives to minimize waste and thereby increase efficiency (Hofer et al., 2012).

From these definitions, we understand that lean production is a system of tools, which are used to eliminate waste. And waste is a product of variability in the company. Another important thought is that, it is a strategy that influences the whole company. This definition sounds quite clear, but it is rather general. Explaining this definition in greater detail can be a problem. Every author understands this definition differently and focuses their research and papers in different ways. They are trying to describe and explain implementation of different parts or tools of a production system. Some say that the most critical factor for lean production adoption is the management of external relationships, rather than the internal operations of the company (Panizzolo, 1998). Others highlight the importance of reducing waste and that we must definitely focus on the identification and elimination of waste (Tuček and Dlabáč, 2012). Liker sees implementing of lean production in focusing on four company dimensions, it is called the 4P model: philosophy, process, people and partners, and problem-solving (Liker, 2004; Liker, Meier, 2006). Another focus is, that the companies that want to move forward in adopting lean production, must manage variable supply, processing times and demand (Hopp, Spearman, 2004; de Treville, Antonakis, 2006).

Here we start to see the difference in opinions of the authors and if we go to more depth, the difference is bigger. Sometimes we find even contradictory opinions like that about cooperation between supplier and customer. Simpson and Power say that relational supplier-customer links have a positive influence on lean production adoption by the supplier (Simpson, Power, 2005). But research of Moyano-Fuentes et al. shows that the level of cooperation with suppliers doesn't have any significant influence on the intensity of lean production adoption (Moyano-Fuentes et al., 2012). And research of Hofer et al. confirms this with similar results, that the direct effect of external lean practices (Just In Time - JIT) on financial performance is statistically insignificant (Hofer et al., 2012).

Another difference is even in the definition of lean production. Womack wrote that lean production is a strategy or philosophy that promotes the use of lean practices (Womack et al., 1990). Tuček and Dlabáč answer to this definition that the methods and tools are not as important as functioning processes (Tuček, Dlabáč, 2012). And Yang et al. add that companies overemphasize the technical aspects of the Toyota Production System, but ignore the human aspects and humanity management (Yang et al., 2012). This leads us to the idea, that there isn't a clear understanding of what lean production is or what is the most important for successful implementation of lean production.

2 How to measure the level of implementation of lean production

Managers of many companies say that they've successfully implemented lean production. But how can we prove it? How do we know that some factory is lean? In many papers the authors use, for evaluation of the level of lean production, some kind of survey. For example Hofer et al. based their research on methodology developed by Shah and Ward (2007). This formative scale comprises 41 questions which capture 10 lean production practices: supplier feedback, supplier JIT, supplier development, customer involvement, pull manufacturing, continuous flow manufacturing, setup time reduction, statistical process control, employee involvement and total productive maintenance.

Other authors like Moyano-Feuntes et al. (2012) and Deflorin and Scherrer-Rathje (2012) conducted their own surveys, which were created on the basis of one of the known frameworks for implementing lean production. For example "Time frame for the lean leap" by Womack and Jones (1996), "Sequences in the implementation of lean production" by Åhlström (1998), "Lean manufacturing implementation" by Hobbs (2004) or "Hierarchical lean transformation framework" by Bicheno and Holweg (2009). All of these frameworks consist of a defined set of steps, which should lead the company to a successful implementation of lean production. The frameworks have some similar steps but there are some differences as well. Powell et al. (2013) made a comparison of these frameworks (Table 1).

Table 1 A comparison of lean implementation processes

	Bicheno and Holweg (2009)	Hobbs (2004)	Womack and Jones (1996)	Ahlstrom (1998)
Initial education	X		X	
Establish strategic vision	X	X	X	
Organizational structure for change			X	X
Define and establish teams	X	X	X	X
Define performance goals	X		X	
Implement basic foundations of lean	X			
Define products	X	X	X	
Define processes	X	X	X	
Establish zero defect mentality	X			X
Ongoing training/learning	X		X	
Vertical information systems	X		X	X
Layout for flow	X	X		
Lean accounting	X		X	
Pull system	X	X		X
Continuous improvement	X	X	X	X

Source: Powell et al., 2013

What do all of these surveys have in common, irrespective of the basis on which the framework was made, is that the results are based on the answers from the people employed in the researched companies. The questionnaire is sent to the managers and they answer the questions about the level of implementation of the parts/tools of lean production. So the answers are very subjective depending on the self-criticism of the managers. The surveys could have problems with clarity and comparability of the answers from different managers. Then comparison of results between different companies can be questionable. Another problem connected with this measuring of leanness is that if we use this method, we haven't evaluated the benefits of this strategy, but only the level of usage of some tools. Formal use of some defined tools doesn't always mean that the company is lean. And on the other hand, company can be lean without using these tools. For example Hofer et al. say that the exact mechanism through which lean production affects financial performance remain under researched (Hofer et al., 2012).

So the company can use different ways how to achieve the benefits of lean production, then the strictly defined set of tools described that the Toyota and others used. Especially if we take into account, that the lean philosophy stems from automotive industry (Deflorin, Scherrer-Rathje, 2012), which is based on mass production and there are a lot of companies which are job-shop or craft production.

3 Our point of view on lean production

To understand what is lean, we have to ask ourselves why we want to implement it. Or in the case of Toyota, why did they, in the second half of the 20th century, develop it. Do you think that the goal of the founder of TPS Taiichi Ohno and his team was to implement some new tools in the production? We don't think so. Toyota and Japan weren't in an easy position after World War II. They had few resources, little money and big competitors on the markets. So they had to find the way how to beat the competitors with less money. This was their target in that time. They had to use their cash as effectively as possible. This is what we think is the philosophy behind lean production. If the company wants to be lean, it has to use working capital effectively. To do it, you have to turn the capital over as fast as possible. Money is effectively used if it circulates and generates more money. There is some amount of money needed in order for the production system to work properly. Lean production is a system that works with lower working capital than other conventional production systems.

This is thanks to the reducing of the size of buffers in the system and the costs of these buffers. Buffers are in the system to cover either the external variability or the internal variability of the system. External variability is generated by sources outside the company, the most frequently by the market and customers. For the company it is mostly hard to affect this variability. Internal variability is caused by random effects and the probability of the internal processes. This variability can company reduce.

Buffers, built to cover both external and internal variability, consume money which doesn't generate value. In the internal variability there is hidden the ineffectiveness of the system or how some authors call it "waste". For example if you don't have a stable process and you produce scrap pieces, then you have to keep buffer which will cover this. If you want to reduce this buffer, then you have to implement Total Quality Maintenance (TQM) or other tool for improving quality. Or if you have some delay in deliveries of material, then you have to keep buffer to not stop production, and you can reduce this buffer for example by implementing JIT. But again there can be more other tools to reduce this buffer. In general buffers can have 3 major forms (Hopp, Spearman, 2008):

- 1) inventory buffer;
- 2) time buffer;
- 3) capacity buffer.

Inventory buffer means that we keep extra material in the transformation process. This extra material can cover unstable process or other problems in the production. Time buffer is that we produce pieces in advance to cover potential delay in the production. Capacity buffer means that we keep free capacity which we can use in situation of unplanned problems. Creating these buffers is somehow natural, and conventional production systems are based on these buffers. Without them they collapse.

But all these types of buffers cost money and from the point of view of the customers they don't have value added and customer isn't willing to pay for them. So we think that implementation of lean production is about reducing these excessive costs of buffers. We agree with Tuček and Dlabáč that is not possible to copy a production system literally "from one to one" and then wonder about its unsuccessful application and dysfunction. (Tuček, Dlabáč, 2012). Every company needs a different approach to the process of implementation of lean production. There are many forces that can influence this process like an industry of the company, markets and company position, social and psychology aspects of the country and employees, and many others. So it is really more about whole company strategy and philosophy but the important is not to forget why we do the changes and what our goals are.

4 How to begin

In the beginning it is important to make a strategic decision about implementing lean production. At this point, we could talk about change of the strategy on the top management level, but when the company is interested in lean production, we can expect that this decision has already been made. Therefore we will go further and we will focus on the beginning of the process of changes in the production. First of all we think that the company should pay attention to identifying the buffers in the system. Our experiences from the real company are that it is not easy to find them. It is because they are hidden in the system and many people can't "see" them or identify them as a buffer. It is because, as mentioned above, it is natural for conventional production systems to include these buffers (and for people, who are used to working with it too). It is important to find those buffers because they cover many types of inefficiencies in the system in the same way as water in the lake that hides the rocks at the bottom. If you reduce the buffers it will show you the inefficiency such as lowering water-level in a lake will show us the rocks.

One of the main buffers defending the improvement of the production system is Work In Process (WIP). High level of WIP is a common problem in many companies. It is remnant of the old production systems used in the 20th century. In many cases it is connected with the planning systems. One of the famous planning systems created in the 60's is Material Requirements Planning (MRP), which is surprisingly still the basis for planning processes in modern Enterprise Resource Planning (ERP) systems. MRP and other systems need for their proper working a high level of WIP.

When they were created there wasn't such a big pressure on efficiency of production processes, so their inaccuracy and imperfection wasn't a problem. Times have changed and today for improving the performance it is a problem. Our experience showed that to reduce WIP, change in planning processes is needed. There are many ways how to realize this change. You can use some improved computer planning system, one of the top systems is Advanced Planning and Scheduling System (APS). Or you can use some kind of physical control system for reducing WIP on the shop floor such as kanban, CONWIP or other tools or combinations of these tools and planning systems.

Here, it is important to remember Little's law. This law (1) explains the relationship between WIP measured in number of pieces, throughput (TH) measured in number of pieces per time unit, and cycle time (CT) measured in time units most often in days (Hopp, Spearman, 2008):

$$WIP = TH \times CT \quad (1)$$

This formula came from queuing theory, when in 1961 John D.C. Little published his article about proof for the queuing formula (2) (Little, 1961):

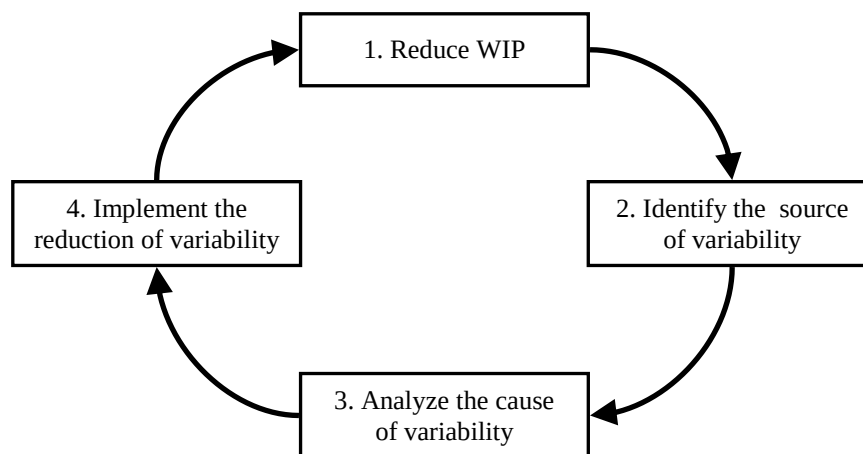
$$L = \lambda W \quad (2)$$

Here L represents the average number of items in a queuing system, λ stands for the average arrival rate of items to the system and W is the average waiting time of an item in the system. There is one big difference between these two formulas. It is throughput representing output in (1) and arrival rate representing input in (2) (Little, 2011). Our experience from real company showed us that this difference is really important. We can use (1) only in case that WIP meets special conditions, for example if there is a strict adherence to the First-In-First-Out (FIFO) system. Otherwise we should use input rate instead of throughput.

It is obvious from this law, that there is a direct correlation between the amount of WIP and production time. So it is good to analyze production times and look for potentials to reduce them. During this analysis it is important to remember that batch size dramatically influences the production times. Reduction of batch sizes in a production process can really shorten the production times and WIP. That is why one piece flow is considered as a top level of lean production.

Now we can see that to take control of WIP we have to focus on planning process, which is one of the most important processes in a production. This can help us with reducing of production times and WIP. When we reduce one of our buffers then we lose comfort of a safety "pillow" in the case that there occurs some variability in the system. In a conventional system there would be a buffer which would cover it and it is very likely that we wouldn't notice that there was some deviation in the system. But when we don't have this buffer, we can easily identify this deviation and the employees are naturally forced to solve it as fast as possible and to find the causes. This is a very crucial phase of the reducing of WIP. People and the system tend to build the buffers again, because it is easier to do it then to analyze the causes and change the system.

We can recognize this situation in the moment, when the decreasing of WIP will stop or even worse, it will start to increase. To avoid this, it is time to use some tools of lean production for example like TPM in case of variability on the side of high failure of machinery or TQM in case of bad quality of production and other tools. To choose the right tool it is important to thoroughly analyze the reasons why we can't continue reducing the WIP and what the causes of variability are. When we are successful with the analysis and with implementation of the tool, we can see that the variability decreased and the system doesn't tend to build the buffers. In that case we can continue reducing the WIP. This cycle we should repeat again and again and we call it, in lean production terminology, continuous improvement (Figure 1).



Source: Own work, 2015

Figure 1 The cycle of reduction of variability and WIP

5 Practical application

We tested functionality of Little's law and reduction of WIP in real Czech production company Motorpal, a.s. We applied these principles in production of camshafts for injection pumps. This department is a typical jobshop production - there are many workplaces with different machines, around tens of types of camshafts are produced, and the sequence of workplaces differs based on the type of camshaft. Furthermore, there is no line, quite small batches, and setup times of some machines take up to a few hours. In the beginning, there were about 5 000 pieces of WIP in the production and it took 5 weeks on average to produce one batch. If you summed all the operation times for one piece up, you wouldn't get more than a few minutes. Camshafts are one of the basic components for injection pumps. They are delivered straight to assembly line. Because of long production time, high WIP and other problems on the shopfloor they were the most problematic component. It happened many times that the assembly line was stopped due to missing camshafts.

The task was clear, to reduce WIP and prevent stopping the assembly line. We made a calculation of the potential reduction of WIP without negative influence on production flow of camshafts. We calculated that the potential without any changes in production (no application of TPM, SMED, 5S and other tools) is to decrease WIP to a half. The only changes in shopfloor management were the reduction of transport batches, and detailed planning and scheduling of the production (we used Excel without APS system). After one month of applying this new system, we reduced WIP to about 2 500 pieces and production time was 2.5 weeks. Thanks to this, we were able to build safety stock before assembly, so there was no stopping of the line due to missing camshafts.

The result was a 2.5-week reduction of production time only by change in the planning system and reduction of WIP. If we focused for example on setup times, we could save a few hours, maximum 1 or 2 days. It would probably take more time to implement and it could be expensive. From this point of view, it is better to start with reduction of WIP first.

This test confirmed the validity of Little's law in practice. After applying these changes in camshaft production, we applied it in the production of other parts with the same results. Based on that, we can assume the universal validity of this law and its principles. Another important result was that there is a big potential of reduction of WIP only with these principles. In every production, we were able to reduce WIP at least by half without applying other tools and without negative influence on production flow and deliveries to assembly. Moreover, we found positive effects on the reliability of deliveries on time, saving capacity, and others. That is why we think that the first and the most important step in implementation of lean production should be reducing WIP.

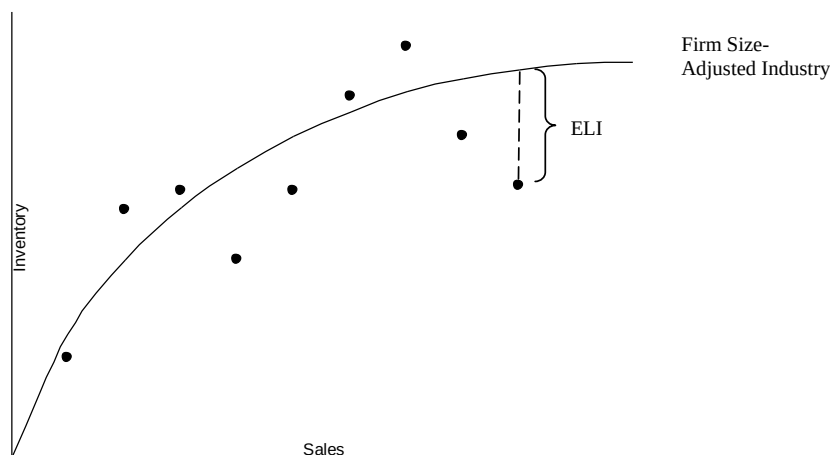
6 Discussion

In the literature review we found that there are a lot of contradictions about definition of lean production and about the process of implementing it. So the question is "Do we know what we are trying to implement?" We think that many companies don't. A lot of authors and companies see the external signs of the system. They are trying to easily copy these signs by implementing some tools, but without deeper understanding of the philosophy hidden behind it and without knowing the reasons why Toyota and other successful companies did it that way. If we knew it, then copying of their production system could probably work.

If we want to be inspired by Toyota and implement lean production like they did, we think that more important is to understand the situation in which they were before implementation. Understanding of this situation could show us the steps to implement lean production. This is what we think is the most crucial for understanding lean production before the start of the implementation process. These considerations lead us to the thought, like some other authors had (for example Tuček and Dlábač), that the tools which we use aren't important. Important is to improve the performance of the company. There are many ways of how to achieve this improvement and a lot of them can be successful. We think that common principle used in successful implementation of lean production is the reduction of buffers. It is not important which tools we use for this reduction, but if they work and generate required results. We don't say that tools like JIT, 5S, TPM and many others connected with lean production don't work, but first we have to know what our goal is. Then we can look for the way to achieve it and what tools to use.

We aren't sure that there is a universal framework how to implement lean production. We don't even think that this process has an end, when we can declare that the company has fully implemented lean production. There are more or less "lean" companies, but it is an endless process. Maybe because of this, the right definition is that lean production is a style of production management. Then we should focus on finding the modes of behavior and management style of people in lean companies, than finding the right tools or frameworks of implementation lean production. In this paper we wrote about basic principles how we think that company can improve its performance through reducing the WIP. In our future research we would like to focus on finding tools, which can help managers to find the right way how to reduce WIP and to choose the right tools and steps, which will help to increase the performance of the company.

Another important thing connected with the lean production is measurement of implementation level. Since, as we mentioned, we don't think that the principle of the implementation of lean production is about implementation of the tools. And we don't think that it would be right to measure it as a level of using these tools. We expect that there would be some indicator, which could measure the level of leanness and the level of improving the production performance. Then we could compare different companies among themselves. Eroglu and Hofer used Empirical Leanness Indicator (ELI) for measuring inventory leanness (Eroglu, Hofer, 2011). This indicator measures a firm's deviation from size adjusted within-industry average inventory levels, which represents the level of inventory leanness of the company (Figure 2).



Source: Eroglu and Hofer, 2011

Figure 2 The sales-inventory relationship

We think that this could be the way to measure the stock buffer. The best indicator should be able to measure the size of all buffers. The question is how it should be constructed. In our future research we would like to focus on finding this indicator.

Conclusion

Lean production is a very popular philosophy of how to manage companies of all the branches of industry in the whole world. It is because the markets and the customers' demands rapidly changed in the last hundred years. And because there are big automotive companies whose performances amazingly increased after implementation of this production system. Lots of companies have followed these leaders, but still the mystery of successful implementation remains unknown. In this paper our goal was to analyze possible reasons.

We used secondary data collection from the papers focused on lean production. We found that there is no clear definition what lean production is. And that there are many contradictions in the interpretation of what the main pillars of this system are. We think this could be one of the reasons. We think, that another reason is, that there is no objective indicator of how to measure the level of implementation of lean production. That is why it is hard to evaluate which methodology works and which doesn't or which has a bigger benefit for the company than others. The last reason we discussed in this paper is that we think that lots of authors and managers confuse implementation of lean production with the implementation of a set of tools and they lose the focus of their target. We think that the target is to improve the performance through the reduction of the buffers in the system, especially the reduction of WIP. This reduces costs for the buffers and decreases requirements for working capital. We presented in this paper a really general point of view on this topic. Our goal wasn't to present the methodology for implementation of lean production. We wanted to present our main ideas and experiences from real company about lean production and possible ways for future researches about this topic.

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Dynamics of changes in Polish organic farms in the years 2003-2013

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Abstract

Purpose of the article Purpose of this article is to determine dynamics of changes in the Polish organic farming and attempts to identify the stimuli that affect the decision to switch a conventional farm to an organic one. In addition, the problems that hinder the management of organic farm have been identified.

Methodology/methods The dynamics of changes in organic farming in all (16) provinces in Poland in the years 2003-2013 has been analysed, with particular emphasis on quantitative traits. The experimental material was primarily statistical data published on the website of the Ministry of Agriculture and Rural Development, Quality Inspection of Agricultural and Food, and the Central Statistical Office, as well as literature and information from direct interviews with eco-farmers. In the analysis the tabular-numeric method has been used together with benchmarking and ranking.

Scientific aim Identification of factors that stimulate or slow down the dynamics of changes in the number and area of organic farms.

Findings Polish farmers showed a remarkable initiative to switch farms to an organic farming, as evidenced by their increasing acreage, the number eco-farms as well as the percentage of the ecological land in agricultural land as a whole. Many farmers taking up organic production have been motivated by financial assistance under the Rural Development Programme. However, qualitative research revealed many problems faced by the eco-farmers.

Conclusions Organic farming in Poland is characterized by many constraints which inhibit the entrepreneurship. The basic type of restrictions results from the nature of the organic production, farm size and their dispersion. The market of organic food products as well as processing organic agricultural products are underdeveloped. Moreover, promotion of organic farming practically does not exist.

Keywords: agricultural, agrifood, farming, organic farming, ecological, ecology, statistical data, rural development

JEL Classification: C00, O130, Q570

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Introduction

Agriculture is one of the basic and primary human activity. The history, culture and lifestyle is associated with agriculture, because in different parts of the world agriculture has evolved in a completely different way depending on the climatic conditions, or a variety of human needs. Over the years, with the advancement of technology in the modern world, the methods of cultivating the land are becoming more and more modern. In order to speed up, to increase and "to improve" crops, fertilizers are used, however, they contribute to the sterilization of the soil, and thus, to reduce the nutritional value of crops (Buzby and Skees, 1994; Benbrook, 2004). To overcome degradation of farmland, the idea of organic farming appeared (Lampkin et al, 1999).

Historical concepts of organic agriculture arose independently of each other at the beginning of the last century, mainly in Europe (Germany, Poland, Switzerland, United Kingdom, France), accepting the attention to soil fertility and quality of agricultural crops (Conford, 2001; Łuczka-Bakula, 2007). To this day, Europe is leading the research of developing ecological farming methods, as well as in the development of the organic food market. For nearly one hundred years, organic farming principles were the inspiration for future generations and are keynote for cultivation. The involvement of countries in the development and financial support for organic agriculture arose relatively recently, as in Western Europe only in the eighties of the twentieth century. In Poland, the beginnings of farming can be attributed to the end of the nineties.

Eco-food raw materials come from farms producing organically, in which production and breeding proceed without the use of chemical fertilizers or chemical pesticides. Processed foods must meet stringent quality requirements (Niggli et al, 2008/2009). The weakness of eco-products is their high price, resulting from higher quality and low scale of their production. Distribution of goods is also costly. Organic production is a general farm management system linked to food production binding best environmental activities, a high level of biodiversity, preservation of natural resources, as well as the application of high standards for animal welfare. It contributes to the improvement of soil fertility by natural means and guarantees production in accordance with the requirements of some consumers, for whom it is important that the products were produced in a natural way with natural substances.

The organic production method has many beneficial functions - providing products for a specific market, formed by the demand for organic products, and at the same time producing public goods in the food sector and contributing to environmental protection and social development of rural areas. In recent years, a significant increase in demand for organic products is evident, therefore, the share of organic farming in agricultural production is increasing in most Member States of the European Union (Molenda-Grysa, 2012b).

The article analyzes the dynamics of changes in organic farming in Poland in the years 2003-2013, with particular emphasis on quantitative traits, such as the number of organic farms and their number per 10,000 inhabitants, the size of the surface of organic farming and their participation in farmland. Factors contributing to the development of organic farms and the difficulties for this development have been examined. In the analysis the tabular-numeric method has been used together with benchmarking and ranking.

1 The idea of organic farming

Organic farming is an alternative to conventional forms of farming and agriculture and is a kind of production system which, through the use of only natural remedies, not processed technologically, keeps the soil in the best possible condition, improves the functioning of ecosystems and raises the level of human health. At the same time this happens in such a way as to comply with the concept of sustainable development (Lampkin et al, 1999; Kilcher, 2007; Molenda-Grysa, 2012a).

The main distinguishing feature of organic farming and the element that connects the various historical concepts of ecological management is taking care of improvement of soil fertility, with a high biological quality of the food, while abandoning the use of resources generated by chemical synthesis, both in fertilization, as well as plant protection. Organic farming is a natural, sustainable system of crops and livestock, friendly environment, with a high degree of self-sufficiency, acceptable from an ethical and aesthetic point of view. It also allows to get high, although not the highest crop of high-quality biologically (Tyburski, Żakowska-Biemans, 2007).

Organic farming is also called elite's farming. This is due to the fact that it requires much more work, good organization or vast knowledge. These factors are essential to the proper functioning of this kind of agriculture. Organic farms have in fact care about the quality of the whole environment in which they operate. Compared to conventional soil tillage methods, this method is much more demanding. The main characteristics that differentiate the conventional agriculture and the organic farming are (Król, 2014): (1) the diversity of agricultural production branch in one farm dictated by the desire to preserve the ecological balance, (2) reducing or eliminating the use of chemical fertilizers and pesticides, as well as the emphasis on crop rotation and use of organic fertilizers. Marking of organic food is really substantial.

The use of the terms "organic", "biological" or "organic" in relation to food can take place when products have been produced and presented for sale in farms or organic processing plants in accordance with the requirements of EC Regulation No 834/2007 (Kowalska, 2010).

Guarantee of organic origin of the product is the system of mandatory inspection and certification, which is overseeing the annual crop from sowing through the growing season, ending on harvest and control of processing process. The quality of organic products must comply with the conditions for entry of food retail market. The labels should contain information such as product name, the name and address of the manufacturer, date of production and shelf life as well as markings related to the identification and control of organic products. In accordance with the laws in force in the European Union, all Member States are obliged to establish a system of control in organic farming, in which should be designated one or more competent government bodies responsible for monitoring compliance with the requirements contained in the regulations on organic farming. Member States may also provide these control tasks to one or more private certification bodies, provided that it has been designated the authority responsible for the recognition of these units and supervision.

In Poland, as in most EU countries, was adopted control system based on private certification bodies recognized and supervised by the designated authorities of the state. The Polish system of control in organic agriculture consists of the Minister of Agriculture and Rural Development (authorizes the certification bodies to carry out inspections and issuing and revoking certificates of compliance in organic farming) and Quality Inspection of Agricultural and Food (supervises the certification bodies and organic production) (Inspekcja Jakości Handlowej Artykułów Rolno-Spożywczych, 2013).

The idea of organic farming derives from countries with a high degree of industrialization and technological development and progress. The excess of agricultural production has led to the fact that the inhabitants are choosing higher quality products. The empirical studies carried out so far in Poland shows that the demand for organic food grows, however, the share of demand for eco-food in relation to the demand for food is relatively low. Little demand for organic food is mainly related to the fact that the number of regular buyers of these products is small, and the knowledge of consumers on the health benefits, as well as certification and labeling of these products is insufficient (Pilarczyk, Nestorowicz, 2010; Żakowska-Biemans, 2011). Therefore, it seems necessary to launch an information campaign in Poland, undertaken jointly by the government, producers and distributors that will have a strong impact on the growth in demand and volume of consumption (Molenda-Grysa, 2012b).

2 Forms of financing to organic farming

Organic farming is one of the main directions of support for rural areas in the European Union, which is an expression of the reorientation of the Common Agricultural Policy towards the greening. Polish accession to the European Union has launched a number of mechanisms that support the development of organic farming. An expression of financial support from the state for organic production are subsidies granted to farms meeting the requirements of the organic farming (Kociszewski, 2009). For any costs associated with the production of organically farmer can get a grant from public funds because his actions fulfills many social expectations.

Since Polish accession to the European Union support for organic farming systems have to be compatible with Community law and the aid was granted in accordance with the rules on state aid according to Art. 107 of the Treaty on the Functioning of the European Union. As part of the national budget and the budget of the European Union, which are available to the organic producers, it should be listed funds available under the Rural Development Plan for 2004-2006 and the Rural Development Programme for 2007-2013 (Ministerstwo Rolnictwa i Rozwoju Wsi, 2009, 2011).

In 2011, organic producers received for the last time, assistance under the measure "Support for agri-environmental and animal welfare" under the RDP 2004-2006. Rules for the granting of support were determined by the Council of Ministers of 20 July 2004 on the detailed conditions and procedures for the provision of financial assistance to support projects of agri-environmental and animal welfare covered by the plan for rural development (Dz. U. No. 174, item. 1809, with as amended).

Since 2007, newcomers in organic production and farmers who are certified, shall be entitled to acreage grant, paid as an additional payment for area payments under the agri-environmental scheme, which is part of the Rural Development Programme 2007-2013. The structure of this program includes 4 priority axes (Improving the competitiveness of the agricultural and forestry sector; Improving the environment and rural development; Quality of life in rural areas and diversification of the rural economy; LEADER). Payments shall be granted to agricultural producers depending on the variant of the pack in terms of the area of land (in hectares) (Molenda-Grysa, 2014a; Ministry of Agriculture and Rural Development, 2009). Joining the program is voluntary, which means that the farmer who is certified of ecological farm does not have to join him. Agri-environmental payment is granted in the amount of 100% of the basic rate for the area of 1-100 ha, 50% of the basic rate for the area 100.01-200 ha, and 10% of the basic rate for the area exceeding 200 ha (Molenda-Grysa, 2014b, Szałda, 2010).

3 Organic farming in Poland in the years 2003-2013

Organic farming is one of the fastest growing sectors of agriculture today in the world, in particular in the European Union. The first organic farms in Poland formed in the late 80s and 90s the last century. The Polish unprocessed organic food market is dominated by products of vegetable origin, and therefore the largest group of organic producers are farms. Last years in Poland are characterized by a constant growth rate of areas used and the number organic farms. It is associated with the aforementioned financial support for organic farming. The development of the organic sector is also reflected in the production of good quality food (Nowogródzka, Szarek, Podstawka, 2013), which translates into a growing market for organic products assortment.

According to the data available under the Eurostat in 2012, Poland was in 3rd place in the European Union in terms of the number of organic farms (25,944). First place was occupied by Italy (43,852 holdings), the second by Spain (30,462); behind Poland were countries such as France (24,425), Greece (23,433), Germany (23,032) and Austria (21,843) (Ministerstwo Rolnictwa i Rozwoju Wsi, 2014a).

3.1 Change of the surface of organic farming

In the years 2003-2013 the ecological area of agricultural land in Poland, on average, increased almost 17-fold from 39,647 hectares in 2003 to 669,969 ha in 2013. The biggest increase in organic farmland took place in Lubuskie (almost 59-fold, from 928 ha in 2003 to 54,693 ha in 2013), Śląskie (36.5-fold, from 198 ha in 2003 to 7,220 ha in 2013) and Wielkopolskie (more than 32-fold, from 1,298 ha in 2003 to 41,616 ha in 2013), while the smallest growth of organic agricultural area (4.3-4.5-fold) was observed in the Małopolskie (from 3,917 ha in 2003 to 17,005 ha in 2013), Podkarpackie (from 6,628 ha in 2003 to 29,506 ha in 2013) and Świętokrzyskie (from 3,347 ha in 2003 to 15,123 ha in 2013). In 2013, the largest area of eco-farming occurred the Zachodniopomorskie (129,586 ha), Warmińsko-mazurskie (116,199 ha) and Podlaskie (63,548 ha) (Table 1)

Table 1 The area of organic farmland in Poland in the years 2003-2013 [ha]

Province	The area of organic farmland [ha]										
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Dolnośląskie	2813	7062	13092	16079	21988	28467	33324	39703	45546	44304	37455
Kujawsko-pom.	1021	1781	3218	4415	5884	5943	6791	7688	8376	8812	11152
Lubelskie	2852	5082	10289	16514	23934	26892	30787	34855	34837	37466	40819
Lubuskie	928	1645	6852	11171	18201	18207	30364	35797	44259	52581	54693
Łódzkie	349	1066	2241	3102	3561	4829	5317	7671	8746	9909	10342
Małopolskie	3917	6696	10682	12456	14481	22655	18142	21968	21396	21050	17005
Mazowieckie	2540	5368	13329	16592	23218	27742	23226	46229	50100	55804	63445
Opolskie	235	389	556	642	934	1571	1555	3180	2703	2930	3542
Podkarpackie	6628	7650	13860	17896	27047	28671	30875	31868	32358	30381	29506
Podlaskie	2023	3855	8356	12150	15391	20410	30995	42917	52066	56367	63548
Pomorskie	1540	1436	4799	5865	10968	11366	18723	22554	27357	30616	28721
Śląskie	198	420	1652	2579	3079	3934	2915	5739	6787	7125	7220
Świętokrzyskie	3347	4529	6603	7750	9824	10841	12039	13123	14301	14551	15123
Warmińsko-maz.	5362	7546	13712	18800	28810	28828	62482	75242	98473	112945	116199
Wielkopolskie	1298	3345	10636	15127	21096	20417	24135	32513	38434	41479	41616
Zachodniopom.	4595	10400	26532	35067	59114	54151	84589	98023	119780	135367	129586
Poland	39647	68270	146408	196204	287528	314921	416261	519068	605520	661687	669969

Source: Own study based on Inspekcja Jakości Handlowej Artykułów Rolno-Spożywczych 2004, 2005, 2007, 2009, 2011, 2014b.

The largest percentage of volume of organic farming in the years 2003-2013 was in the Zachodniopomorskie (11.6% in 2003, 3rd place and 15.2-19.3% in 2004-2013, 1st place) and Warmińsko-mazurskie (13.5% in 2003, 9.6-17.3% in 2006-2013, 2nd place and 11.1-9.4% in 2004-2005, 3rd place), while the lowest percentage was in Opolskie (0.6% in

2003, 15th place and 0.6-0.5% in 2004-2013, 16th place) and Śląskie (0.5% in 2003, 16th place and 0.6-1.1% in 2004-2013, 15th place) (Table 2).

Table 2 The share of organic agricultural crops in agriculture in the provinces in the years 2003-2013 (in%) and the place of province

Province	`03	`04	`05	`06	`07	`08	`09	`10	`11	`12	`13											
	%											Place										
Dolnośląskie	7.1	10.3	8.9	8.2	7.6	9.0	8.0	7.6	7.5	6.7	5.6	7	4	5	6	6	4	3	5	5	6	8
Kujawsko-pomorskie	2.6	2.6	2.2	2.3	2.0	1.9	1.6	1.5	1.4	1.3	1.7	12	11	13	13	13	13	13	13	14	14	13
Lubelskie	7.2	7.4	7.0	8.4	8.3	8.5	7.4	6.7	5.8	5.7	6.1	6	7	8	5	4	6	6	7	8	8	7
Lubuskie	2.3	2.4	4.7	5.7	6.3	5.8	7.3	6.9	7.3	7.9	8.2	13	12	10	10	8	10	7	6	6	5	5
Łódzkie	0.9	1.6	1.5	1.6	1.2	1.5	1.3	1.5	1.4	1.5	1.5	14	14	14	14	14	14	14	14	13	13	14
Małopolskie	9.9	9.8	7.3	6.3	5.0	7.2	4.4	4.2	3.5	3.2	2.5	4	5	6	8	10	7	11	11	11	11	11
Mazowieckie	6.4	7.9	9.1	8.5	8.1	8.8	5.6	8.9	8.3	8.4	9.5	8	6	4	4	5	5	9	3	4	4	4
Opolskie	0.6	0.6	0.4	0.3	0.3	0.5	0.4	0.6	0.4	0.4	0.5	15	16	16	16	16	16	16	16	16	16	16
Podkarpackie	16.7	11.2	9.5	9.1	9.4	9.1	7.4	6.1	5.3	4.6	4.4	1	2	2	3	3	3	5	9	9	10	9
Podlaskie	5.1	5.6	5.7	6.2	5.4	6.5	7.4	8.3	8.6	8.5	9.5	9	9	9	9	9	9	4	4	3	3	3
Pomorskie	3.9	2.1	3.3	3.0	3.8	3.6	4.5	4.3	4.5	4.6	4.3	10	13	12	12	11	11	10	10	10	9	10
Śląskie	0.5	0.6	1.1	1.3	1.1	1.2	0.7	1.1	1.1	1.1	1.1	16	15	15	15	15	15	15	15	15	15	15
Świętokrzyskie	8.4	6.6	4.5	3.9	3.4	3.4	2.9	2.5	2.4	2.2	2.3	5	8	11	11	12	12	12	12	12	12	12
Warmińsko-mazurskie	13.5	11.1	9.4	9.6	10.0	9.2	15.0	14.5	16.3	17.1	17.3	2	3	3	2	2	2	2	2	2	2	2
Wielkopolskie	3.3	4.9	7.3	7.7	7.3	6.5	5.8	6.3	6.3	6.3	6.2	11	10	7	7	7	8	8	8	7	7	6
Zachodniopom.	11.6	15.2	18.1	17.9	20.6	17.2	20.3	18.9	19.8	20.5	19.3	3	1	1	1	1	1	1	1	1	1	1

Source: Own study

Table 3 Eco-agricultural land as a percentage of total agricultural land and of area of the province in the years 2003, 2007 and 2013 (in%)

Province	percentage of total agricultural land			percentage of area of the province		
	2003	2007	2013	2003	2007	2013
Dolnośląskie	0.24	2.29	4.06	0.14	1.10	1.88
Kujawsko-pomorskie	0.09	0.56	1.06	0.06	0.33	0.62
Lubelskie	0.17	1.53	2.97	0.11	0.95	1.62
Lubuskie	0.17	3.81	13.41	0.07	1.30	3.91
Łódzkie	0.03	0.33	1.05	0.02	0.20	0.57
Małopolskie	0.48	2.12	3.05	0.26	0.95	1.12
Mazowieckie	0.11	1.09	3.34	0.07	0.65	1.78
Opolskie	0.04	0.17	0.68	0.02	0.10	0.38
Podkarpackie	0.71	3.60	5.05	0.37	1.52	1.65
Podlaskie	0.17	1.38	5.92	0.10	0.76	3.15
Pomorskie	0.17	1.47	3.89	0.08	0.60	1.57
Śląskie	0.03	0.71	1.89	0.02	0.25	0.59
Świętokrzyskie	0.46	1.73	3.03	0.29	0.84	1.29
Warmińsko-mazurskie	0.41	2.98	11.38	0.22	1.19	4.81
Wielkopolskie	0.07	1.17	2.38	0.04	0.71	1.40
Zachodniopomorskie	0.42	6.27	15.49	0.20	2.58	5.66
Poland	0.22	1.81	4.59	0.13	0.92	2.14

Source: Own study based on Inspekcja Jakości Handlowej Artykułów Rolno-Spożywczych, 2004, 2009, 2014b; GUS 2014; BDL

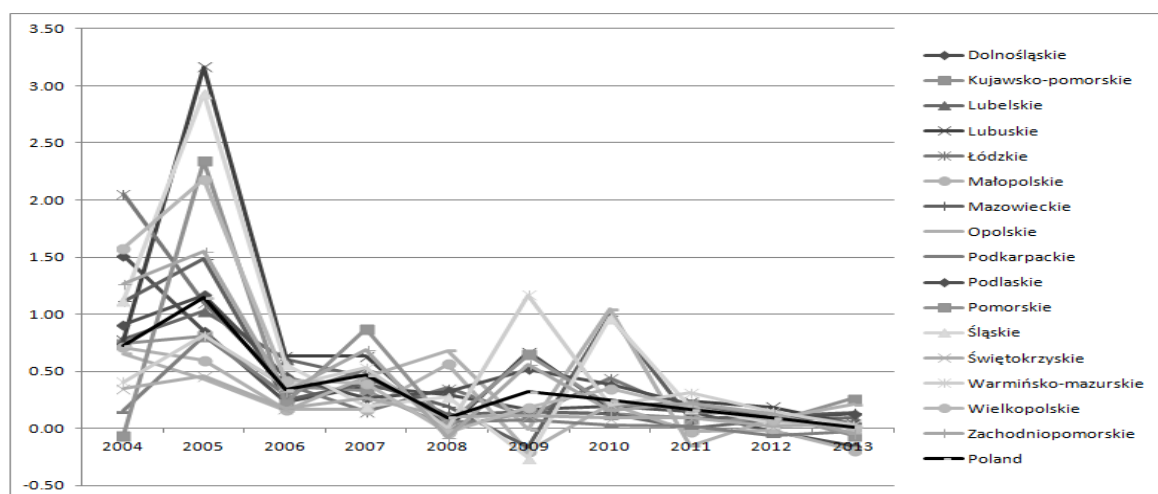
Analysis of the participation of organic crops for agricultural land and to the total area of each province confirms the dominant position of the Zachodniopomorskie, Warmińsko-mazurskie and Lubuskie and small participation of the Opolskie, Łódzkie, Kujawsko-pomorskie and Śląskie (Table 3).

Analyzing the dynamics of changes of ecological area of agricultural land in 2004-2013 can be seen that most of the provinces had the strongest upward trend in 2004-2005 (1.02-3.17). It was connected with the Polish accession to the EU in 2004 and launching the financial support mechanisms for organic farming under the Rural Development Plan for 2004-2006. In the following years the rate gradually, with slight fluctuations, decreased, despite the fact that the Rural Development Programme for 2007-2013 was launched, and since 2008 in several provinces negative value appeared (from -0.19). It could happen due to appearing problems concerning knowledge on organic farming among farmers and among staff of the Agricultural Advisory Centres. The provinces with the highest dynamic changes of eco-farming area in the period were the following: Lubuskie (3.17 in 2005, 0.63 in 2006, 0.19 in 2012), Opolskie (0.68 in 2008, 1.04 in 2010), Warmińsko-mazurskie (1.17 in 2009, 0.31 in 2011), Łódzkie (2.05 in 2004), Pomorskie (0.87 in 2007) and Kujawsko-pomorskie (0.27 in 2013) (Table 4).

Table 4 Dynamics of changes of the surface of organic farmland in 2004-2013

Province	Dynamics of changes of the surface of organic farmland									
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Dolnośląskie	1.51	0.85	0.23	0.37	0.29	0.17	0.19	0.15	-0.03	-0.15
Kujawsko-pomorskie	0.74	0.81	0.37	0.33	0.01	0.14	0.13	0.09	0.05	0.27
Lubelskie	0.78	1.02	0.61	0.45	0.12	0.14	0.13	0.00	0.08	0.09
Lubuskie	0.77	3.17	0.63	0.63	0.00	0.67	0.18	0.24	0.19	0.04
Łódzkie	2.05	1.10	0.38	<u>0.15</u>	0.36	0.10	0.44	0.14	0.13	0.04
Małopolskie	0.71	0.60	0.17	0.16	0.56	-0.20	0.21	-0.03	-0.02	<u>-0.19</u>
Mazowieckie	1.11	1.48	0.24	0.40	0.19	-0.16	0.99	0.08	0.11	0.14
Opolskie	0.66	<u>0.43</u>	<u>0.16</u>	0.45	0.68	-0.01	1.04	<u>-0.15</u>	0.08	0.21
Podkarpackie	0.15	0.81	0.29	0.51	0.06	0.08	<u>0.03</u>	0.02	<u>-0.06</u>	-0.03
Podlaskie	0.91	1.17	0.45	0.27	0.33	0.52	0.38	0.21	0.08	0.13
Pomorskie	<u>-0.07</u>	2.34	0.22	0.87	0.04	0.65	0.20	0.21	0.12	-0.06
Śląskie	1.12	2.93	0.56	0.19	0.28	<u>-0.26</u>	0.97	0.18	0.05	0.01
Świętokrzyskie	0.35	0.46	0.17	0.27	0.10	0.11	0.09	0.09	0.02	0.04
Warmińsko-mazurskie	0.41	0.82	0.37	0.53	0.00	1.17	0.20	0.31	0.15	0.03
Wielkopolskie	1.58	2.18	0.42	0.39	-0.03	0.18	0.35	0.18	0.08	0.00
Zachodniopomorskie	1.26	1.55	0.32	0.69	<u>-0.08</u>	0.56	0.16	0.22	0.13	-0.04
Poland	0.72	1.14	0.34	0.47	0.10	0.32	0.25	0.17	0.09	0.01

Source: Own study



Source: Own study

Figure 1 Dynamics of changes in the surface of organic farmland in Poland and in provinces in the years 2004-2013

Figure 1 shows the trends in the dynamics of change of the eco-farming areas in provinces presented in Table 4. It is worth to pay attention to the dynamics of the lowest negative values that occur in Pomorskie (0.07 in 2004), Zachodniopomorskie (-0.08 in 2008) (still being the best with respect to the percentage of organic agricultural crops), Śląskie (-0.26 in 2009), Opolskie (0.15 in 2011), Podkarpackie (0.06 in 2012) and Małopolskie (-0.19 in 2013).

Tendency for Poland proceeded similarly as in the provinces, although changes were more gentle. The high-est growth was reported in 2005 (1.14), whereas the lowest in 2013 (0.01).

3.2 Change in the number of organic farms

In the years 2003-2013 the number of organic farms in Poland, on average, increased almost 12-fold from 2,286 in 2003 to 27,093 in 2013. The biggest increase was recorded in Lubuskie (nearly 72-fold, from 20 in 2003 to 1,433 in 2013), Zachodniopomorskie (more than 43-fold, from 85 in 2003 to 3,668 in 2013) and Warmińsko-mazurskie (almost 34-fold, from 126 in 2003 to 4,245 in 2013). In contrast, the smallest increase in organic farms number (3.2-5-fold) was in Świętokrzyskie (from 382 in 2003 to 1,215 in 2013), Małopolskie (from 407 in 2003 to 1,875 in 2013) and Opolskie (from 19 in 2003 to 95 in 2013). In 2013, the highest number of eco-farms occurred in the Warmińsko-mazurskie (4,245), Zachodniopomorskie (3,668) and Podlaskie (3,423); while the smallest number of organic farms was recorded in the provinces Opolskie (95), Śląskie (264) and Kujawsko-pomorskie (430) (Table 5).

Table 5 The number of organic farms in Poland in the years 2003-2013

Province	The number of organic farms										
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Dolnośląskie	110	197	395	481	652	879	1021	1227	1322	1312	1217
Kujawsko-pomorskie	62	89	143	173	217	258	279	327	371	390	430
Lubelskie	263	393	773	1072	1402	1566	1710	1962	2065	2174	2180
Lubuskie	20	66	190	256	361	480	579	833	1081	1356	1433
Łódzkie	34	71	174	218	261	314	366	420	478	518	550
Małopolskie	407	697	1191	1363	1627	2100	2197	2156	2138	2103	1875
Mazowieckie	249	434	849	1028	1215	1481	1673	1935	2140	2373	2730
Opolskie	19	26	36	46	53	62	63	79	86	90	95
Podkarpackie	288	430	852	1164	1577	1892	2014	2091	2045	1940	1780
Podlaskie	122	207	482	628	847	1160	1528	2033	2440	2924	3423
Pomorskie	46	66	181	222	273	392	494	648	763	894	914
Śląskie	33	47	93	116	143	176	199	228	238	236	264
Świętokrzyskie	382	547	785	892	995	1165	1170	1243	1296	1288	1215
Warmińsko-mazurskie	126	244	432	586	773	1059	1514	2279	3033	3793	4245
Wielkopolskie	40	70	201	264	415	516	588	748	888	974	1074
Zachodniopomorskie	85	176	405	678	1059	1396	1696	2373	3065	3579	3668
Poland	2286	3760	7182	9187	11870	14896	17091	20582	23449	25944	27093

Source: Own study based on Inspekcja Jakości Handlowej Artykułów Rolno-Spożywczych, 2004, 2005, 2007, 2009, 2011, 2014a.

The largest percentage of eco-farms in the years 2003-2013 there was Małopolskie (12.9-18.5% in 2003-2009), Zachodniopomorskie (11.5-13.1% in 2010-2011) and the Warmińsko-mazurskie (14.6-15.7% in 2012-2013). Moreover, a high proportion of organic farms were also recorded in Podkarpackie, Podlaskie, Lubelskie and Świętokrzyskie. The lowest percentage the whole period considered indicated in Opolskie (0.3-0.8%, 16th place), Śląskie (0.9-1.4%, 14th and 15th place) and Kujawsko-pomorskie (1.5-1.9%, 14th place) (Table 6).

Analyzing the dynamics of changes in the number of organic farms in 2004-2013, one can see that most of the provinces had the strongest upward trend in 2004-2005 (1.01-2.30) (similarly to the trend in area of organic crops). In the following years the growth gradually decreased, in 2010 there appeared one negative value (-0.02), and since 2011 the negative growth occurred already in several provinces. It was probably a result of discouragement of some farmers, poor work of Agricultural Advisory Centres and excessive bureaucracy. In Discussion the main results of interviews and questionnaire research concerning the problems related to organic farming in Poland are presented.

Table 6 The percentage of organic farms in the provinces in the years 2003-2013 (%)

Province	'03	'04	'05	'06	'07	'08	'09	'10	'11	'12	'13	'03	'04	'05	'06	'07	'08	'09	'10	'11	'12	'13
	%											Place										
Dolnośląskie	4.8	5.2	5.5	5.2	5.5	5.9	6.0	6.0	5.6	5.1	4.5	8	8	9	9	9	9	9	9	8	9	9
Kujawsko-pomorskie	2.7	2.4	2.0	1.9	1.8	1.7	1.6	1.6	1.6	1.5	1.6	10	10	14	14	14	14	14	14	14	14	14
Lubelskie	11.5	10.5	10.8	11.7	11.8	10.5	10.0	9.5	8.8	8.4	8.0	4	5	5	3	3	3	3	6	6	5	5
Lubuskie	0.9	1.8	2.6	2.8	3.0	3.2	3.4	4.0	4.6	5.2	5.3	15	14	11	11	11	11	11	10	10	8	8
Łódzkie	1.5	1.9	2.4	2.4	2.2	2.1	2.1	2.0	2.0	2.0	2.0	13	11	13	13	13	13	13	13	13	13	13
Małopolskie	17.8	18.5	16.6	14.8	13.7	14.1	12.9	10.5	9.1	8.1	6.9	1	1	1	1	1	1	1	3	5	6	6
Mazowieckie	10.9	11.5	11.8	11.2	10.2	9.9	9.8	9.4	9.1	9.1	10.1	5	3	3	4	4	4	5	7	4	4	4
Opolskie	0.8	0.7	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.3	0.4	16	16	16	16	16	16	16	16	16	16	16
Podkarpackie	12.6	11.4	11.9	12.7	13.3	12.7	11.8	10.2	8.7	7.5	6.6	3	4	2	2	2	2	2	4	7	7	7
Podlaskie	5.3	5.5	6.7	6.8	7.1	7.8	8.9	9.9	10.4	11.3	12.6	7	7	6	7	7	7	6	5	3	3	3
Pomorskie	2.0	1.8	2.5	2.4	2.3	2.6	2.9	3.1	3.3	3.4	3.4	11	14	12	12	12	12	12	12	12	12	12
Śląskie	1.4	1.3	1.3	1.3	1.2	1.2	1.2	1.1	1.0	0.9	1.0	14	15	15	15	15	15	15	15	15	15	15
Świętokrzyskie	16.7	14.5	10.9	9.7	8.4	7.8	6.8	6.0	5.5	5.0	4.5	2	2	4	5	6	6	8	8	9	10	10
Warmińsko-mazurskie	5.5	6.5	6.0	6.4	6.5	7.1	8.9	11.1	12.9	14.6	15.7	6	6	7	8	8	8	7	2	2	1	1
Wielkopolskie	1.7	1.9	2.8	2.9	3.5	3.5	3.4	3.6	3.8	3.8	4.0	12	12	10	10	10	10	10	11	11	11	11
Zachodniopom.	3.7	4.7	5.6	7.4	8.9	9.4	9.9	11.5	13.1	13.8	13.5	9	9	8	6	5	5	4	1	1	2	2

Source: Own study

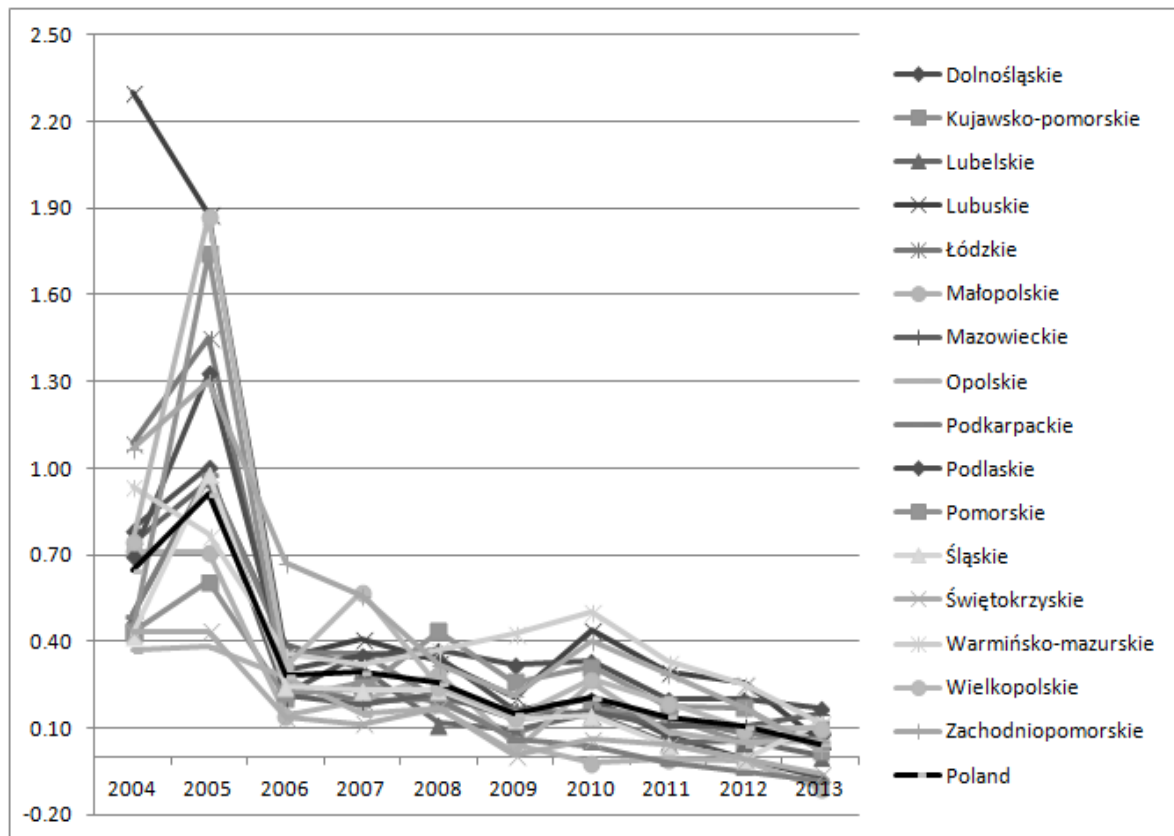
Table 7 Dynamics of changes in the number of organic farms in Poland and in provinces in the years 2004-2013

Province	Dynamics of changes in the number of organic farms										
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	
Dolnośląskie	0.79	1.01	0.22	0.36	0.35	0.16	0.20	0.08	-0.01	-0.07	
Kujawsko-pomorskie	0.44	0.61	0.21	0.25	0.19	0.08	0.17	0.13	0.05	0.10	
Lubelskie	0.49	0.97	0.39	0.31	<u>0.12</u>	0.09	0.15	0.05	0.05	0.00	
Lubuskie	2.30	1.88	0.35	0.41	0.33	0.21	0.44	0.30	0.25	0.06	
Łódzkie	1.09	1.45	0.25	0.20	0.20	0.17	0.15	0.14	0.08	0.06	
Małopolskie	0.71	0.71	<u>0.14</u>	0.19	0.29	0.05	<u>-0.02</u>	-0.01	-0.02	<u>-0.11</u>	
Mazowieckie	0.74	0.96	0.21	0.18	0.22	0.13	0.16	0.11	0.11	0.15	
Opolskie	<u>0.37</u>	<u>0.38</u>	0.28	0.15	0.17	0.02	0.25	0.09	0.05	0.06	
Podkarpackie	0.49	0.98	0.37	0.35	0.20	0.06	0.04	<u>-0.02</u>	<u>-0.05</u>	-0.08	
Podlaskie	0.70	1.33	0.30	0.35	0.37	0.32	0.33	0.20	0.20	0.17	
Pomorskie	0.43	1.74	0.23	0.23	0.44	0.26	0.31	0.18	0.17	0.02	
Śląskie	0.42	0.98	0.25	0.23	0.23	0.13	0.15	0.04	-0.01	0.12	
Świętokrzyskie	0.43	0.44	<u>0.14</u>	<u>0.12</u>	0.17	<u>0.00</u>	0.06	0.04	-0.01	-0.06	
Warmińsko-mazurskie	0.94	0.77	0.36	0.32	0.37	0.43	0.51	0.33	0.25	0.12	
Wielkopolskie	0.75	1.87	0.31	0.57	0.24	0.14	0.27	0.19	0.10	0.10	
Zachodniopomorskie	1.07	1.30	0.67	0.56	0.32	0.21	0.40	0.29	0.17	0.02	
Poland	0.64	0.91	0.28	0.29	0.25	0.15	0.20	0.14	0.11	0.04	

Source: Own study

The highest dynamics of changes in the number of eco-farms was recorded in Lubuskie, Zachodniopomorskie, Wielkopolskie, Pomorskie, Warmińsko-mazurskie and Mazowieckie (Table 7).

Figure 2 shows the trends in the dynamics of change in the number of organic farms presented in Table 7. In addition, it is worth paying attention to the lowest negative values of the dynamics that occurred in Małopolskie (-0.02 in 2010 and -0.11 in 2013) and Podkarpackie (-0.02 in 2011 and -0.05 in 2012). Tendency for Poland proceeded similarly as in the provinces, although changes were more gentle. The highest growth was reported in 2005 (0.91) and the lowest in 2013 (0.04).



Source: Own study

Figure 2 Dynamics of changes in the number of organic farms in Poland and in provinces in the years 2004-2013

Number of eco-farms in the region largely depends on the number of inhabitants. Therefore, to compare the number of farms in various provinces, one needs to objectify of their number. Analysis of the number of organic farms per 10 thousand inhabitants leads to the conclusion that in 2003-2007 Świętokrzyskie was dominating (3.0-7.8 eco-farms to 10,000 inhabitants), in 2008-2010 - Podlaskie (9.7-17.1 organic farms), in the years 2011-2013 - Warmińsko-mazurskie (20.9-29.3 eco-farms). Moreover, the high rate (over 10 organic farms per 10,000 inhabitants) was also recorded in the provinces Lubelskie, Lubuskie and Zachodniopomorskie. The lowest rate of eco-farms per 10,000 inhabitants (less than 1) for the period considered (2003-2013) was in Śląskie (0.1-0.6) and Opolskie (0.2-0.9). On average, in Poland the least eco-farms per 10,000 inhabitants was recorded in 2003 (0.6), while the highest number - in 2013 (7.0) (Table 8).

As is clear from the interviews, there was a lack of information (and still is) in the provinces on the number of eco-farms and their products, and places where one can purchase their products. Therefore the number of regular buyers of organic food is small (low demand). Also knowledge of consumers on the health benefits, as well as certification and labeling of these products is definitely insufficient.

Since 2013 in major Polish cities so called eco-markets are taking place, but their marketing is definitely too weak.

Table 8 The number of organic farms per 10 thousand inhabitants

Province	The number of organic farms per 10 thousand inhabitants											Place										
	'03	'04	'05	'06	'07	'08	'09	'10	'11	'12	'13	'03	'04	'05	'06	'07	'08	'09	'10	'11	'12	'13
Dolnośląskie	0.4	0.7	1.4	1.7	2.3	3.1	3.5	4.3	4.5	4.5	4.2	9	9	10	10	9	9	9	9	9	9	10
Kujawsko-pomorskie	0.3	0.4	0.7	0.8	1.1	1.2	1.3	1.6	1.8	1.9	2.1	10	11	12	14	13	14	14	14	14	14	14
Lubelskie	1.2	1.8	3.5	4.9	6.5	7.2	7.9	9.1	9.5	10.0	10.1	4	4	5	4	4	6	6	6	7	6	5
Lubuskie	0.2	0.7	1.9	2.5	3.6	4.8	5.7	8.2	10.6	13.3	14.0	11	9	8	8	8	8	8	7	4	4	4
Łódzkie	0.1	0.3	0.7	0.8	1.0	1.2	1.4	1.7	1.9	2.1	2.2	16	12	12	14	14	14	13	13	13	13	13
Małopolskie	1.3	2.1	3.6	4.2	5.0	6.4	6.7	6.5	6.4	6.3	5.6	3	2	4	5	7	7	7	8	8	8	8
Mazowieckie	0.5	0.8	1.6	2.0	2.3	2.8	3.2	3.7	4.0	4.5	5.1	7	8	9	9	9	10	10	10	10	9	10
Opolskie	0.2	0.2	0.3	0.4	0.5	0.6	0.6	0.8	0.8	0.9	0.9	11	15	15	15	15	15	15	15	15	15	15
Podkarpackie	1.4	2.0	4.1	5.5	7.5	9.0	9.6	9.9	9.6	9.1	8.4	2	3	2	2	2	3	4	4	6	7	7
Podlaskie	1.0	1.7	4.0	5.3	7.1	9.7	12.8	17.1	20.3	24.4	28.6	5	5	3	3	3	1	1	1	2	2	2
Pomorskie	0.2	0.3	0.8	1.0	1.2	1.8	2.2	2.9	3.3	3.9	4.0	11	12	11	11	11	11	11	11	11	11	11
Śląskie	0.1	0.1	0.2	0.2	0.3	0.4	0.4	0.5	0.5	0.5	0.6	16	16	16	16	16	16	16	16	16	16	16
Świętokrzyskie	3.0	4.2	6.1	7.0	7.8	9.2	9.2	9.8	10.1	10.1	9.6	1	1	1	1	1	2	5	5	5	5	6
Warmińsko-mazurskie	0.9	1.7	3.0	4.1	5.4	7.4	10.6	16.0	20.9	26.1	29.3	6	5	6	6	6	5	2	2	1	1	1
Wielkopolskie	0.1	0.2	0.6	0.8	1.2	1.5	1.7	2.2	2.6	2.8	3.1	16	15	14	14	11	12	12	12	12	12	12
Zachodniopom.	0.5	1.0	2.4	4.0	6.3	8.2	10.0	14.0	17.8	20.8	21.3	7	7	7	7	5	4	3	3	3	3	3
Poland	0.6	1.0	1.9	2.4	3.1	3.9	4.5	5.4	6.1	6.7	7.0											

Source: Own study based on Inspekcja Jakości Handlowej Artykułów Rolno-Spożywczych, 2004, 2005, 2007, 2009, 2011, 2014a; BDL

4 Discussion

Organic farming is a rapidly growing sector in the world (European Commission, 2014; FiBL and IFOAM 2014, 2015). In Poland, the actions are taken that will undoubtedly contribute to the increased interest in this method of farming, similar to those undertaken e.g. in Germany and Denmark (Molenda-Grysa, 2012b). Among these initiatives, the development of scientific research carried out for the benefit of organic farming can be emphasized (mainly in the development of technologies for eco-food producers). In addition, on the development of organic farming in Poland beneficially affect the possibility of reducing unemployment in rural areas through the employment of surplus labor force, and an increase in producers' income by profits from the sale of agro-tourism and regional products. This development is also driven by the well-functioning institutions of control and certification (Ministerstwo Rolnictwa i Rozwoju Wsi, 2014b).

The increasing number of organic producers and ecological area of agricultural land also testify to the development of eco-agriculture. The integration of Poland with the EU has created the possibility of using the natural conditions for the development of organic food production, among others, through funding programs implemented in this activity. Instrument for the implementation of the Common Agricultural Policy in terms of pro-environmental actions are agri-environmental programs. The growing interest of farmers taking organic production is largely the result of financial assistance, which is offered as part of the Rural Development Programme. Many farmers choose this direction of production only because of the subsidies per hectare, which are compensation for the, in general, the lower yields obtained by the eco-farmer (Woźniak and Dziedzic, 2007; Molenda-Grysa, 2014b).

In the years 2003-2013 in Poland there was an increase of both the average size of organic agricultural crops (almost 17-fold) (Table 1) and the number of organic farms (almost 12-fold) (Table 5). Definite leaders in eco-management are the Zachodniopomorskie and Warmińsko-mazurskie that for the period considered stand out the largest ecological area of agricultural land (Table 2), and since 2010 they have been dominant in terms of the number of eco-farms (Table 6). In order to switch their farm to eco-farms the farmers perfectly made use of the natural conditions in these provinces. It is worth emphasizing high position of Lubuskie and Podlaskie which moved a few places up, which indicates a high entrepreneurship of eco-farmers.

Furthermore Lubuskie (13.41% in 2013) is in second place in terms of participation of organic farmland to the total agricultural land, after Zachodniopomorskie (15.49%) and before Warmińsko-mazurskie (11.38%) (Table 3). In each area of interest the lowest positions are occupied by Opolskie and Śląskie, which is understandable, given the industrial nature of these regions. In contrast, the downward trend is surprising (even significantly) in provinces with high agri-cultural potential, namely Świętokrzyskie and Małopolskie.

The analysis of the data presented in the article shows that Polish farmers demonstrated noteworthy entrepreneurship (Bartosik, 2010) to switch their farms on organic farming, as evidenced by the increasing acreage, the number of eco-farms as well as participation of the eco-agricultural land in the total area of agricultural crops. This fact is also confirmed by the head of the International Cooperation Centre for Organic Agriculture of Central and Eastern Europe (EkoConnect), noting that the Polish organic agriculture has the potential for a very big success, especially since Polish accession to the European Union because the Poles demonstrate a large entrepreneurship in activating the organic market, and in acquiring new markets for Polish organic products (Nowogródzka, 2012).

Recently, the so called Eco-Markets are held once or twice a week in larger cities in Poland, where farmers can sell their products. During the interviews conducted in the period September 2013 - October 2014 with a number of eco-farmers (when shopping in eco-markets in Kielce, Lublin and Katowice) they reported problems that make it difficult for them to function. These included lack of market for large quantities of organic products, the lack of effective plant protection products, ineffective promotion of organic farming, organic food import from other countries, poor network of eco-advisory services to farmers, a large amount of work. Such problems may affect the withdrawal of farmers from organic farming methods; e.g. in 2013 compared to the previous year, the number of eco-farms decreased in Dolnośląskie, Małopolskie and Świętokrzyskie (Table 5). A nuisance indicated by the eco-farmers during the interviews confirms the results of the research conducted by Nowogródzka and Szarek (2012) in 2011, in a group of 200 organic farms. As the most serious problems the respondents mentioned: excessive bureaucracy (71.4%), the need to enter the same information to different institutions (52.04%), lack of seed or the problem with a turnover of seed (42.86%), lack of regulations governing homemade food processing (37.76%).

5 Conclusion

The main reason for the farmers to decide switching their farms from conventional to organic was the financial support provided under the Rural Development Plan 2004-2006/Programme 2007-2013. However, organic farming in Poland is characterized by many constraints that inhibit entrepreneurship. The basic type of constraints results from the nature of the organic production, farm size and their dispersion and insufficient knowledge on organic farming among farmers and among staff of many Agricultural Advisory Centres, the lack of information in the provinces on the number of eco-farms and their products, and places where one can purchase their products. Qualitative research (interviews and questionnaire) revealed eco-farmers' problems: excessive bureaucracy, the need to enter the same information to different institutions, the lack of seed or the problem with a turnover of seed, no regulations governing homemade food processing, the lack of market for large quantities of organic products, the lack of effective measures to protect plants, ineffective promotion of organic farming, organic food import from other countries, poor network of eco-advisory services to farmers, a large amount of work.

A well-developed market for eco-friendly means of production and sales, and intensive promotion of organic farming, as well as a well-developed network of information and advice, or investment in processing organic agricultural products will contribute to the fact that farmers have believed in the possibility of production leading to the expected profits.

The increasing demand for eco-products will beneficially affect the development of Polish organic farming. Also the potential possibility of reducing unemployment in rural areas through the employment of surplus labor force, and an increase in producers' income profits from by tourism, as well as well-functioning institutions of control and certification are important factors for eco-farming. Undoubtedly, for the eco-agriculture is important the development of scientific research carried out for the benefit of organic farming, including developing innovative technologies for processing the eco-food.

In order for Polish agriculture to keep on growing, and strengthen its position and compete with imported organic food, it seems necessary to take many more activities that are proven in other industries, such as the creation of clusters (Walczyk, 2012; Walczyk, 2014), which can be an opportunity for competitive advantage of the grouped eco-farmers. So far, Poland has only one cluster of organic agricultural producers, namely Organic Food Valley in Lubelskie. Furthermore, it is necessary to invest in the processing of organic agricultural products. In 2013, Poland had only 407 organic processing plants (Inspekcja Jakości Handlowej Artykułów Rolno-Spożywczych, 2014), as against 27,093 eco-farms is too little and stands for a problem, as the ecological resources often go to the conventional processing plants.

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Communication streamline in order to increase multinational organizations performance

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Abstract

Purpose of the article Economic multinational organizations face increasingly more with the need to obtain performance in any field and area of the world where it operates. In this sense, multinational organizations, those who actually hold supremacy in terms of economic power, this is brought to the attention in an increasingly wider way. This paper discusses and analyze an issue of great interest nowadays, namely, identifying ways to streamline communication in order to increase the performance of multinational organizations.

Methodology/methods The method chosen for research is the investigation and the investigation instrument, the questionnaire. Setting the sample and applying the questionnaire were considered compliance with the requirements of the methodology of scientific research, and ethical behavior requirements. The research was conducted on a representative sample consisting of 116 multinational organizations, of which 11 located in Sibiu (Romania) and 105 in Bucharest (Romania). Respondents were human resources managers in these multinational organizations.

Scientific aim The approach and development of some ideas about features and ways in which it can act to increase the efficiency of communication in multinational organizations, and on this basis to obtain their performance.

Findings Human resources managers understand and apply in a realistic way the specific ways to increase the efficiency of communication in multinational organizations. These methods are significantly influenced by creating a stimulating framework to the development of communication and action of some internal and external factors, in which organizational culture occupies a special importance.

Conclusions After analyzing the available theoretical approaches and practical conclusions drawn from the study we conducted, we can say that effective communication is an essential aspect in ensuring a successfully conduct of all qualitative activities of multinational organizations, as well as obtain their performance.

Keywords: communication, efficiency, human resources management, multinational organizations, organization management, performance

JEL Classification: D8; F2; L2

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Introduction

In today's society, multinational organizations are the main economic power of the world. They are in a continuous process of development and seeking of factors that could contribute significantly to increase their performance. Increasingly more, the necessity of obtaining performance by multinational organizations in any area and region of the world in which they operate, has become a constant concern under scientific report.

In this regard, certain current potentiator factors of obtaining and increasing performance are being increasingly present in both theoretical scientific approaches and practical actions of each multinational organization. The fact that the actions of multinational organizations are planned and carried out in at least two different countries, generates the appearance of such specific factors, among which communication occupies a privileged place.

Given this reality, this paper brings into discussion and analyze some aspects regarding the influence that the organization's internal communication has on the performance growth of multinational organizations and specific modalities to streamline this process. This nowadays' challenge is constituted as a focus area for scientific, theoretical and applied research, and also a starting point in solving problems faced by multinational organizations.

1 The place and role of communication in performance multinational organizations

In the last period, more and more experts consider the fact that communication plays an important role in ensuring and increasing the multinational organizations' performance, this being materialized in a series of specialty papers.

In a first perspective is discussed how to communicate certain aspects in organizations as well as its significant consequences on the activities of organizations.

While sharing knowledge is vital for the development of competitive advantages of organizations and is integral to knowledge management (KM), managers often find it to be the most difficult KM practice to promote in various social contexts because knowledge sharing does not come naturally to most individuals (Bock et al., 2006; Wang and Hou, 2015).

In order to be successful at the task, individuals need many different resources, cognitive skills, communication skills, and personality (Syman et al, 2015). Also, there have been studies indicating the sticky nature of knowledge as a barrier to knowledge sharing because it causes the sharing processes among individuals to be slow, costly, and uncertain (Liu and Liu, 2008).

If it is considered that multinational organizational socialization is a psychosocial process of transmission - assimilation attitudes, values, concepts and models of behavior specific to a multinational organization, in order to form, adaptation and social integration of each employee, one can consider that socialization is an *interactive process of communication* (Popescu, 2012, p.10).

On the other hand we can also say that, from a cultural perspective, communication is a system of meanings and symbols created by human thought, whose diversity results from the changes that have occurred during individual manifestations. Given the presence and the particular role of communication in any process, phenomenon, fact, activity, it was constituted in a separate component, in a particular field of specialized approach of most sciences.

Therefore, the concept of communication has several meanings, as it was developed by a number of quite different sciences such as: philosophy, history, geography, psychology, sociology, organization theory, management, ethnology, economics, political sciences, linguistics, cybernetics, cognitive sciences, ethnology, etc. In this respect, communication is different to a sociologist from the one observed by a computer or an economist. So, *every field of knowledge has definitions that emphasize one side or another of the communication term: case, exchange, transfer, transport, energy, information etc.*

This thing leads us to the idea that you can define and identify several types of communication in multinational organizations: artificial, social, cultural, managerial, cybernetics, organizational, etc.

If we would propose to give a single definition of communication it should be connected to the human being. If it is desired to enter depth in human interrelations at the level of multinational organizations to understand the purpose, means, inter individual and intra organizational kinds of human communication (between managers and departments that they manage), then we have shown, at least briefly, a radiograph of relations, with their rules and examples for a possible practical approach. In this regard, further, we propose several definitions of the concept of communication from different perspectives, based on the definitions given by a Romanian author (Popescu, 2012, p.15).

Table 1 Definitions of communication

No.	Perspective	Definition
1.	cognitive	transmission of certain content (information, views, opinions, feelings, etc.) or a formal relationship with the material and spiritual heritage of the multinational organization
2.	technique	pooling, sharing and transmission of some properties of a number of things that belong to multinational organization
		what connects employees and behaviors of multinational organization between them
		the structure transmission process of multinational organization components that can be identified in time and space
4.	linguistics	verbal exchange between each member of the multinational organization and the other members, at inter individual or inter organizational level
		notice, information, news, report - contact, relationship, connection - presentation within a circle of specialists of multinational organization, an individual contributions in a scientific problem; paper which is the subject of a scientific communication
5.	managerial	exchange of signals in order to inform, instruct or persuade, based on the existence of organizational values and shared meanings, conditioned by the context of relations between those who communicate dependent on organizational context
		the action of communicating and its result
6.	psychological	totality of processes by which a member thinking may influence another one of another member of the multinational organization
		relationship between employees of multinational organization that involves intentional transmission or not, with influences on the receptor and with retroactive effect at individual and organizational level
7.	sociological	process of delivering a message with an organizational significance and its transmission in a encoded manner using a channel to a recipient for receptive
		process by which a member of the multinational organization (communicator) transmits stimuli in order to change the behavior of other members (auditorium)
		social interaction through the system of symbols and messages specific to multinational organization

(Source: Popescu, 2012, p.15)

We can conclude that communication in multinational organization means at the same time, to communicate something (an indication, a feeling, an impression, a piece of information etc.) to a member of the multinational organization, person or thing, but also to be or to enter in a relationship more or less directly with another member of the multinational organization or any structure located on different levels of hierarchy and specialization within it. Thus, the attempts to define the term communication in multinational organizations bring out the polyvalent aspect of the term.

It is important to conduct appropriate activities of the Human resources management subsystem - selection, assessment, motivation, training, promotion etc. - which guarantees favorable conditions for ensuring competent personnel capable of effective communication (Muntean, 2015, p.88).

Thus, the elements or fundamental factors of communication in multinational organization become: the initiator (transmitter), receiver (recipient), channel (vehicle - used here in the broad sense), message and effect. In this way, each communication process has a specific common structure, but also to each multinational organizations represented by a particular type of relationship developed by the trinomial transmitter - message - receiver.

The communication process is always changing, dynamic and mutually (Ross, 1986, p. 9). Analyzing the different definitions of communication we find that, in the process of communication, the focus is on the next aspects:

- relationship, connection, interaction;
- transfer, transmission;
- channel;
- memory, storage;
- the context of communicative act;
- symbols, speech, language;
- stimuli;
- intent and power (communication is a means of influence);

- receiving messages;
- common interests and / or divergent;
- response.

In this way, communication in multinational organization is an exchange of signals (audible, tactile or visual) in order to inform, instruct or persuade every member of it, based on the existence of shared meanings, conditioned by the context of relations between those that communicates, depending on the social context in which multinational organization operates.

Therefore, communication is a social phenomenon with specific character because organizational reality of the communication process can not be conceived outside the social framework. First of all, because both of the transmitter and receiver are people, so culture bearers. Man is a social product, essentially, being a social being. In this capacity, he creates culture, expressing the ideals, aspirations, faced by his work with the desires of other people and develops through relationships with other people, namely communication.

The role of communication in both the context of appearance and development of organizational intelligence (organizational, technological and linguistic context) and that of determinant factors as well as of the organizational intelligence co-factors (organizational learning, leadership, organizational culture, management) is major. Furthermore, generating knowledge in organizational level is achieved through communication because the most important aspect of any process is *information and communication is the way in which this can be achieved*.

Of course, the approach by the multinational organizations of the existing situation involves hiring professionals, integrating and socializing them, taking into account a number of factors including organizational culture and effective use of human potential through proper motivation of employees without additional expense and effective management of conflicts and crisis within the economic entity in question, become significant. Internal integration into an organization becomes the process by which a culture is self created and maintained through communication.

Prior research recognizes the importance of examining personal motivational factors that facilitates or restrain knowledge sharing behaviors, and many studies have intensively investigated these issues in various contexts (Bakker et al., 2006; Chang and Chuang, 2011; Cruz et al., 2009; Foss et al., 2009).

The relationship between *communication and organizational culture* has been studied by a number of specialists who concluded that a strong culture is associated with an effective communication because a strong culture is providing , most often, a suitable framework for strategy-culture interrelation and, secondly, communication enables the sharing of culture in the organization, being crucial for the performance development of its. Also, organizational culture continues to be cited as an important factor in the success or failure of information systems (IS) adoption (Jackson, 2011).

Moreover, joining the term of communication to the one of organizational culture generates a new concept that operates both in theory and in practice: the culture of communication process or communicational culture (Gherghinescu and Cristache, 2008). Developing a culture of communication, being determined by the Internet revolution and the development of specific communication means of multinational organizations, as well as the evolution of the communicant organizational message communicant message shows that the achievements in the field of communication have a major impact on behaviors and representations of multinational organization members.

Virtual communication, offer the perfect connection between the organizations and allows many users (Teck-Yong, 2004). Being an interactive environment it allows clients to start communication and gives organizations the possibility to personalize communication (Sinkovics and Penz, 2005). The flux of the on line communication increases the informational transmission speed (Rao et.al, 2003) and communication is more transparent and more accurate (Lee et.al, 2011).

It is also worth noting that being systemically addressed the culture of communication in multinational organizations provides information about its subsystems, which may be established as vectors required to provide - implications on developing communication and individual and organizational performance.

Considering the opinions of specialists, but also our own choices on this topical issue, we conducted a field investigation to identify the views of human resources managers regarding the influence of communication on achieving and growth performance of multinational organizations, of which some observations are summarized below.

2 The research methodology

The organization, development and finishing of the field research were based on the studied theoretical aspects related to the communication process and its influence on the performance of multinational organizations, as well as on the requirements of scientific research methodology in social and humanities sciences . This study, correlated with the issue of nowadays multinational organizations, we consider it as having a special significance regarding obtaining relevant information of the work theme.

2.1 Purpose, objectives and hypotheses

The study purpose is to determine the necessity and influence that communication has on achieving performance of multinational organizations.

Specific objectives

- a. Determining to what extent communication contributes to achieving performance of multinational organizations;
- b. Identification of specific factors of communication, that can help to increase performance of multinational organizations;
- c. Analysis of the effects of communication efficiency on organization performance.

The hypothesis from which we leave into investigation is suggested by the theoretical part of the paper where it was emphasized that communication is a very important process in any multinational organization, which is influenced in turn by numerous factors within the organization, where including organizational culture plays a significant role.

Thus, *the general hypothesis* is: Communication contributes substantially to obtaining multinational organizations' performance.

This hypothesis can be operationalized, yielding the following statements:

- a. The performance or failure of multinational organizations is significantly determined by the quality of the existing communication process.
- b. The more the communication process is carried out properly, the decisions made and actions taken at the multinational organizations level will ensure obtaining their performance.
- c. If accomplishes the adequate formation of employee and are adopted measures to maintain performance by adapting the communication process in the context of the requirements of social and technical changes, then increase the diversification and quality of communication that ensures performance of multinational organizations.

2.2 Materials and methods

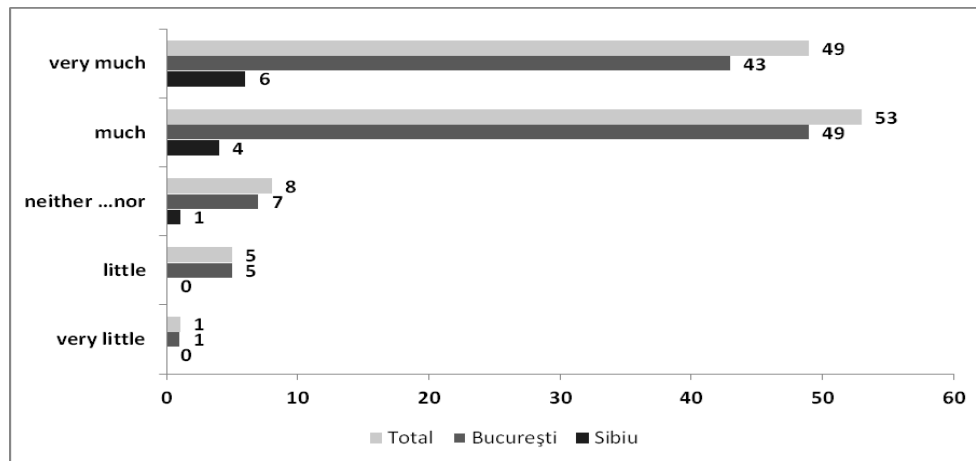
We chose as research method the survey and the questionnaire as a tool for opinion investigation. Of course, in selecting the sample and applying the questionnaire were considered compliance with the requirements of the methodology of scientific research, and the adoption of an ethical behavior. The research was conducted on a representative sample consisting of 116 medium and large multinational organizations of which 11 from Sibiu and 105 from Bucharest. The respondents were human resource managers in these multinational organizations.

3 Results and discussions

After applying the questionnaire with its specific questions were obtained a series of responses, and some of which are presented below:

The first question in the survey was: *To what extent do you think the communication process within the organization where you work contributes to increasing its performance?*

It appears that most of the respondents consider the communication process as particularly important, it contributing significantly to achieving performance of multinational organizations. Thus, communication, through its characteristics leaves its mark on activities of the organization and on how the tasks are performed by employees.



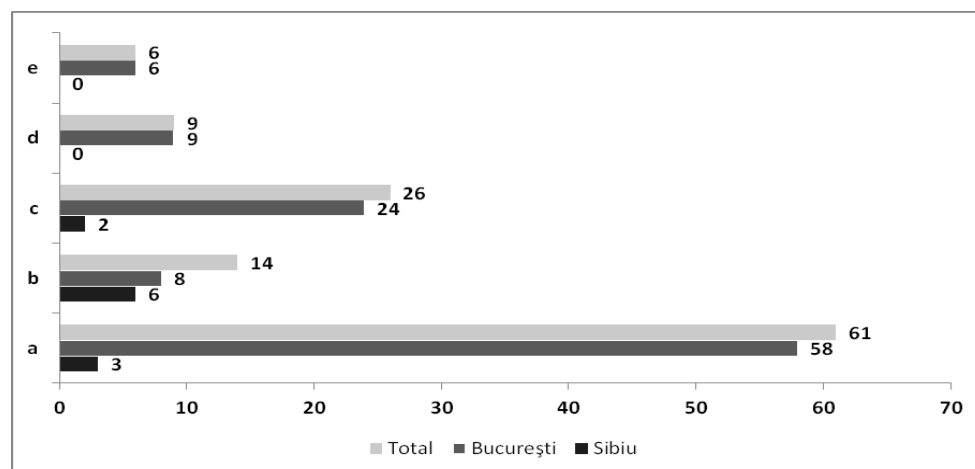
Source: Own work

Figure 1 Interpreting the data of the question no. 1 from the questionnaire at a global level (Sibiu and Bucharest)

This is determined by the form of communication. In this regard, the following question brings to the forefront the identification forms of existing communication within organizations under study, this having the follow content:

What form of communication is most often used in the organization where you work?

- a) written communication
- b) online or chat communication
- c) offline (email) communication
- d) verbal communication
- e) communication by phone



Source: Own work

Figure 2 Interpreting the data of the question no. 2 from the questionnaire at a global level (Sibiu and Bucharest)

From the analysis of the above figure, we can see that more than half of respondents from Bucharest sits first the response option a - written communication, followed by the response option c - offline communication.

Regarding respondents from Sibiu they placed on the first place the response option b - online communication, followed by the response option a - written communication.

The conclusion is clear: written communication keeps its very important place and role in the tasks transmission, responsibilities or information necessary to conduct activities both in multinational organizations from Sibiu, but especially in those from Bucharest. However, another form of phatic interaction, different in that there is no direct visual and acoustic contact, occupies their important and well defined position. Therefore, e-mail communication has become the most important form of mediated communication conducted in these multinational organizations, thanks to the ease that it can be used to its familiarity among users.

According to received responses from the following items of the questionnaire presented in table 2, respondents emphasize how such requirements have found resolution in multinational organizations.

Thus, the majority of human resource managers in multinational organizations agree with the following statements:

- "Organization's employee ideas get quickly to the management level of organization" (90.10%).
- "In the organization which I represent, the communication with the management of the organization is open to all employees" (85.10%).
- "In every department of the organization are stimulated and supported the ideas of each member by his colleagues" (69.60%).
- "At the human resources department management level there is responsiveness and professionalism for solving the problems of organization's employee" (78.30%).

Also, as can be seen from the following table content, a significant percentage of them chose the variant "indifferent" in the case of all four statements.

Table 2 Respondents opinions regarding a series of statements

		Multinational Organizations	%
„ Organization's employee ideas get quickly to the management level of organization "	Disagreement	0	0%
	Indifferent	15	9,3%
	Agreement	145	90,1%
	Total agreement	1	0,6%
The total of investigated organizations		161	100%
„ In the organization which I represent, the communication with the management of the organization is open to all employees "	Disagreement	3	1,9%
	Indifferent	18	11,2%
	Agreement	137	85,1%
	Total agreement	3	1,9%
The total of investigated organizations		161	100%
„ In every department of the organization are stimulated and supported the ideas of each member by his colleagues "	Total disagreement	3	1,9%
	Disagreement	5	3,1%
	Indifferent	33	20,5%
	Agreement	112	69,6%
	Total agreement	8	5,0%
The total of investigated organizations		161	100%
„ At the human resources department management level there is responsiveness and professionalism for solving the problems of organization's employee "	Disagreement	3	1,9%
	Indifferent	13	8,1%
	Agreement	126	78,3%
	Total agreement	19	11,8%
The total of investigated organizations		161	100%

It is also noticed from the same table, that if specific percentages of *agreement* and *total agreement* are totaling, the amount for each of the statements under evaluation exceed 70%, which shows that there is a friendly place for communication and problem solving of employees, of course, and having also a certain amount of subjectivism that may be presented in human resources managers option. On the other hand, the value of actions that ensures the dialogue with employees, responsiveness from the human resources management to their problems, is really quite low. This demonstrates the existence, yet, of a certain bureaucracy in persons activity called upon to manage the specific aspects of the employee status for each member of multinational organizations, starting with the first contact of those who, through recruitment activity, subsequently, become members of the organization.

According to respondents, 81.32% of the analyzed organizations have taken measures to maintain performance by adapting the communication process at the given demands context of social and technical changes. After testing the hypothesis related to this issue, it was found that the percentage of medium and large multinational organizations from Sibiu and Bucharest have taken steps in this direction in order to maintain performance in a market strongly affected by the crisis, is more than 50%.

Among these measures, the most important were:

- a. changes in communication of the with the organization's staff with the external environment (36.50% of organizations);
- b. changes in communication between organization's departments and within them (31.90% of organizations);
- c. changes regarding the implementation of advanced technology for process of communication (72.60% of organizations);
- d. training employees to improve their ability to communicate in foreign languages (14% of organizations).

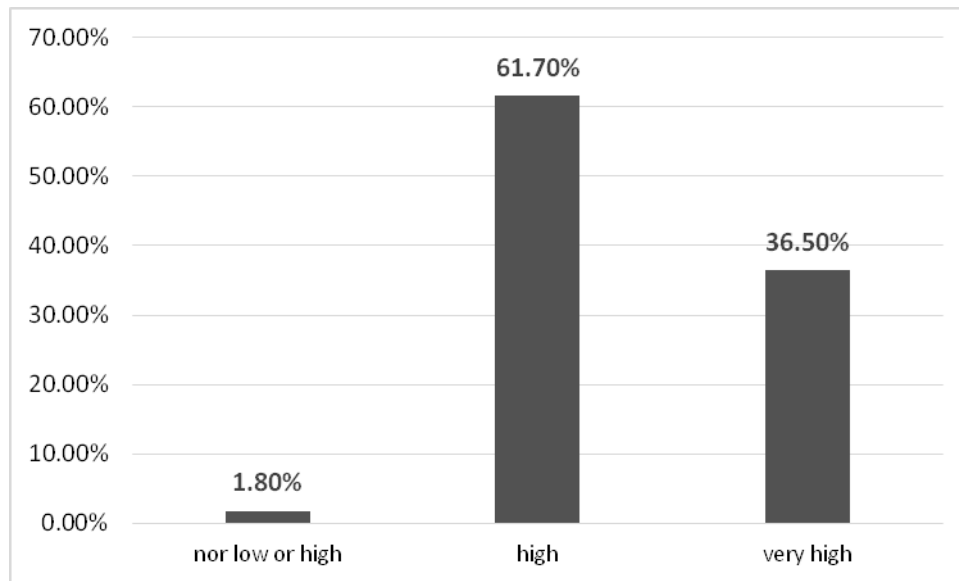
It is found that, to obtain performance, multinational organizations pays more attention to streamline the process of communication both in regarding the communication with organization's staff with the environment as well as inside between its main subsystems. For this was considered necessary to introduce changes in the training policies of human resources, but also in terms of philosophy and vision of the communication process as a whole. This respondent's option clearly shows the need to ensure the performance of multinational organizations under the current requirements of society, of that management of the organization that highlight the skills and management styles of individuals in a position to act on such requests. This would require a flexible organization management, inventive, creative and always open to communication with employees and external environment of the organization, based on each employee's professionalism, knowledge and recognition of the value that represents each employee. It is also necessary to create an enabling environment for effective communication as well as an organizational culture equally subordinated to organization's interests and aspirations of employees.

At it's turn, the data processing regarding respondents' assessments *of the extent to which a number of specific socio-professional integration activities of employees contributes to increasing the performance of multinational organizations*, showed the following results:

- most of the subjects opted for the variant "a very large extent" in the activities regarding: providing a collaborative work environment (59%); stimulating the competitive environment in the organization (65.80%); improving management skills (65.80%); ensuring optimal number of employees needed to meet organization's objectives (68.30%); accurate assessment of employee activity (55.90%); the recognition of performance (49.70%);
- the subjects showed in a very high proportion also the variant "to a large extent" for: increase individual performance of employees (55.30%); improving the quality of communication (60.10%), creating a strong organizational culture (54.10%).

Appreciation by human resources managers of each of the specific activities of social integration of employees contributes *to a large extent* and *to a very large extent* at the increasing of the performance of multinational organizations, especially of the variant - *increasing the quality of communication*, which received summed values of over 90%, shows us that these are the most important and will influence, and in fact should influence further, the organization management strategies especially human resources management in the field of human resources.

Another question with reference to one of the factors that can influence the effectiveness of communication in multinational organizations has the follow content: *Which do you think is the importance level of organizational culture in increasing the efficiency of communication in the organization you belong to?*



Source: Own work

Figure 3 The importance level of organizational culture in achieving efficiency of communication

According to respondents, *the importance level of organizational culture in achieving efficiency of communication (according to figure no. 3)* is "high" (61.70%) and "very high" (36.50%).

The very high level of importance given to organizational culture (Figure no. 3), which is 98.20%, shows the great appreciation that respondents have on the perception of organizational culture in all its complexity, as a significant factor of influence in achieving an efficient management in the multinational organizations to streamline the communication process within them.

Conclusions

In multinational organizations, regardless of size, field of activity or the area in which it resides, carrying out activities are conducted mostly based on a fundamental element of living, namely communication. Communication at the level of multinational organizations and outside them is the engine of the entire activity, because each of these constitutes works and performs with the help of communication.

Analyzing communication in multinational organizations both in terms of the factors that influence it as well as the peculiarities of its manifestations we can conclude that it must be adapted to the context of communication, of nature of the facts and the nature and the message content that is intended to be communicated, of communication skills of each employee.

Given these considerations, the field investigation that we have undertaken, aimed to identify the opinions of managers from the field of human resources regarding the place, role and importance of communication in multinational organizations.

A first conclusion is that communication in multinational organizations is understood as a dynamic factor in obtaining performance at the individual and organizational level. For this are used different forms of communication, both through the using of modern information as well as in written form. Understanding the important role of communication, managers of multinational organizations have adopted specific strategies, for the recovery of communication at individual, departmental and organizational level.

Following continuously the increasing quality of communication as a special resource of integrating the employees in multinational organizations, managers place the organizational culture in at the heart of their major concern. Conditioning of this reality is given by the diversity of cultures of members of multinational organizations that influence the achievement of an organizational environment open to collaboration and intercultural communication. Thus, for multinational organizations, the communication problems in theoretical and practical report represents in an area of great interest to obtain and increase their performance.

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‘Quo vadis’ management consultancy: Hungarian research - 2014

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Abstract

Purpose of the article Following the global financial crisis, consultancy firms were compelled to reduce many of their costs, including marketing, although, at the same time, they had to develop a new outlook and new methods in order to survive. This study attempts to show that Hungary was no exception: the companies which survived the crisis moved towards improving efficiency as well as towards innovation and rejuvenation. The good news was that simple downsizing was rarely implemented. Currently, the main question is: What is the next step? The study aims to ascertain whether or not the Hungarian consultancy market has recovered from the crisis, what the main consulting fields now are and what their expectations for the future might be.

Methodology/methods The Management and HR Research Centre at the University of Szent István (together with the Hungarian Consulting Round Table) conducted survey in 2014. Finally, we received 165 completed questionnaires from Hungarian consulting firms and conducted 15 interviews. The research sample is not representative.

Scientific aim The main issue addressed was how consulting fields in general, and the role of management consultancy in particular, are changing in Hungary.

Findings Interestingly, in Hungary the services most in demand differ from global trends. The demand for HR consultancy appears abnormally low in these terms.

Conclusions Every consulting firm had to take counter-measures in response to the economic crisis, and most companies launched new activities, redefined their strategy, entered new markets, cut their costs or increased efficiency. The good news is that firms usually did not downsize. Apparently, this kind of engagement was successful, as the majority of firms achieved revenue growth - which indicates that the crisis had been overcome. It bodes well that the image of the profession was, in general, assessed positively, and this in itself can help to strengthen the Hungarian consulting industry.

Keywords: management consultancy, Hungary, effects of crisis, reaction to crisis

JEL Classification: L89, M19, M21

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Introduction

Several years after the outbreak of financial crisis, which is made the third longest recession in the U.S. since World War II, and had been spread all over the world, we have been searching its reasons, effects and resolutions. It means that we might have to reconsider our theories, methods and so on, and if it needed we have to leave our well-known pathes (Arthur, 1994; Kuhn, 2000; Taleb, 2007).

Searching the reasons of crisis, we can find several answers and many of them relating to psychological or other soft factors, too. One of these is trust. According to Guiso (2010) the collapse in trust, that investors had in the financial institutes, played a crucial role in the crisis.

On the other hand, one of the effects has been the trust deterioration that is clearly demonstrated against financial firms. Due to lack of trust the revenues of financial consulting firms reached the peak – according to Kennedy Information, the share of global financial consulting was the fifth of the consulting industry' total in 2012 (The Economist, 2013). On the other hand, we can find several examples about increasing of other consulting fields, too – Paradigm Consulting, dealing with employee-benefits and human-resources consulting, achieved sharply growth after the crisis. Generally, we suppose that changes of consulting industry reflect the knowledge needed.

According to Biech (2007) companies need a variety of resources, but one is needed by all: human knowledge. And one of the ways to ensure this – and which is clearly relevant to us – is the use of consultants.

As the following historical overview shows, management consultancy has improved considerably in recent years, and, following this introduction, we summarise both the major changes of the last few years and current trends and after all, we present our research and findings.

The main question was how consulting fields in general, and the role of management consultancy in particular, are changing in Hungary. Within this we assumed the followings:

- The larger the company, the more it downsizes.
- There is link between total turnover and operating area.
- We assumed that there is relation between the participants' opinion about their image and consultants will be the advocates of knowledge or not.

Firstly, we assumed that smaller companies cannot downsize significantly, because these loss of employee would jeopardise an ongoing operation.

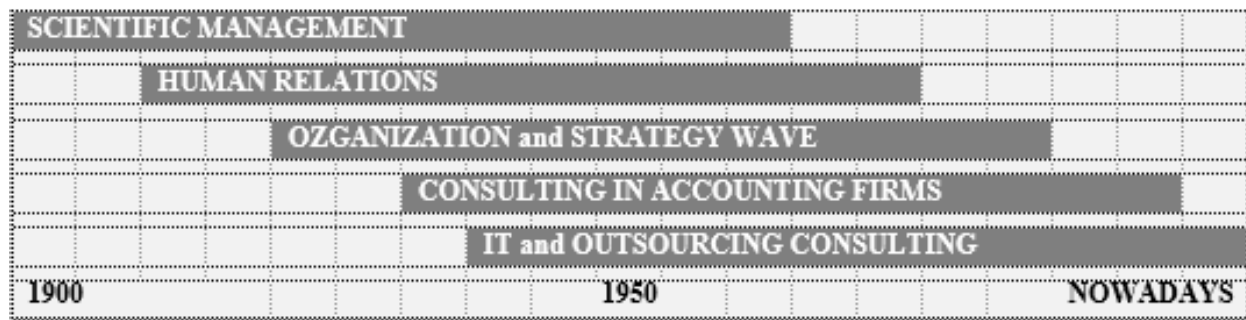
On the other hand, we thought that changes in total turnover depend on operating area assuming that crisis had different impact on each consulting fields. Additionally we assumed that smaller companies suffered more due to crisis because of less reserves, smaller customer base etc.

At part of the future expectations, we were interested that what participants think about their judgement or image in their client's view. Every (consulting) service based on trust, because clients have to show their weaknesses or deficiencies, too, or the consultant cannot take a resolution. In this view, the image of consultants is essential. Additionally, the basis of consulting services is knowledge sharing. For this reason, consultants have to advocate the knowledge or there is no need for their services.

1 Literature overview

The European Federation of Management Consultancies Associations (FEACO) describes management consultancy as “... the rendering of independent advice and assistance about management issues. This typically includes identifying and investigating problems and opportunities, recommending appropriate action and assistance with the implementation of the recommendations.” On the other hand, according to the European Standard of Management Consultancy Services, it is “a set of multi-disciplinary activities of intellectual work within the field of management activities, which aim create value or promote changes, by providing advice or solutions, by taking actions or by producing deliverables.” (MSZ EN 16114:2012, pp.7) These are very similar definitions, both based on the creation of value. We attempt to evaluate this view by detailing its theoretical development in Figure 1 (below) - based on Kipping and Clark (2012).

Although the early pioneers of management consulting appeared in the 19th century in England and the USA, what we might term the first major upsurge or development wave was that relating to '**scientific management**' and generated by Taylor, Bedaux and Maynard. (Poór, Milovecz, 2011; Poór, 2010). The focus was essentially on increasing efficiency and was in wide circulation by the 1960s. Today this lives on in relation to Quality Management and Process Engineering, although it has also been used in Production and Services. (Fink, 2004; Niedereicholz, 2008).



Source: Authors' own work, 2015 based on Kipping, Clark, 2012

Figure 1. Five waves of development in management consultancy

The second wave related to Human Relations. The best known advocate of this approach is George Elton Mayo, who noted the link between efficiency and mental health and made proposals to decrease workplace stress. The results of his work were a significant increase in the use of employer interviews and the elaboration of several consulting methods. (Block, 1981). Another well-known advocate of Human Relations is Eric Lansdown Trist. His aim was to facilitate the development of organizations by action research and the application of science (Kubr, 1996).

The third wave was that of the growth of **strategy consulting**. World War II brought about a set of institutional changes: the increased number and complexity of organisations, the establishment of military-industrial complexes both during and after WWII, the spread of business education and the business-related press. These changes promoted the rise of strategy consulting in the 1930s. This field and its advocates (McKinsey, Boston Consulting Group, Bain Corporation, A.T Kerney) have long played the most significant role in consulting.

The growth of **consulting in accountancy firms** was the next wave. In the 1960s the rise of Information Technology encouraged standardisation in accounting services and the general reduction of client fees in the 1970s and 1980s. This, in turn, led to diversification among accountancy firms in terms of "added value".

On the other hand, technological evolution also led to **IT consulting and outsourcing**, and this forms the fifth wave. Market research shows that, today, the size of market for the general Management Consulting sector has been overtaken by IT consulting services (Eurostat, 2008 in Kipping, Clark, 2012).

The development of consultancy, however, cannot be broken down into clear and separate stages; it is, rather, the case that new consulting fields were elaborated and developed in parallel (O'Mahoney, 2010; Brooks, Edward, 2014). The later waves indicate changes in approach and the penetration of new consulting fields, and so, on the basis of FEACO surveys, we think it relevant to summarise the aggregate data of the European consulting market – together with the main characteristics of Central and Eastern Europe and Hungary. The key figures for the European consulting industry are shown from 2006 to 2012 in Table 1.

Total revenue from Management Consulting decreased by 5% in 2009 due to the crisis, but in 2011 it had already surpassed the 2008 figure, although growth rates show a slower rise. Employment rose constantly until 2010, but then decreased sharply in 2011.

Table 1 Key figures of the European consulting market (2008-2012)

	2006	2007	2008	2009	2010	2011	2012 est.
Market size (€ billions)	74	81	86.7	83.7	86.2	92.4	97.7
Growth rate	10.7%	9.5%	8.2%	-5%	2.9%	6.6%	5.8%
Total staff ('000s)	450	583	557	574	6659	517	n.a.
Breakdown of Key Services							
Business Consulting	39%	42%	42%	43%	50%	52%	n.a.
IT Consulting	17%	15%	14%	14%	15%	19%	n.a.
Development & Integration	19%	20%	21%	18%	19%	10%	n.a.
Outsourcing	19%	20%	17%	19%	12%	9%	n.a.
Other services	5%	3%	6%	6%	4%	10%	n.a.

Central & Eastern Europe							
Total turnover)	1.8	2.15	2.4	2.1	2	2.9	n.a.
Within the European market	2.4%	2.7%	2.8%	2.5%	2.2%	3.0%	n.a.
Business & IT Consulting (€bn)	1 (56%)	1.3 (60%)	1.7 (71%)	1.6 (76%)	1.3 (65%)	2.2 (76%)	n.a.

Source: Poór et al. (2009, 2012)

Four main consulting fields can be defined during the reference period. The already strong presence of Business Consulting among consulting services grew still further from 2006 to 2011, and in the latter year represented more than half of the total turnover.

Three fields – IT Consulting, Development & Integration and Outsourcing - were roughly equal from 2006 to 2010, but IT Consulting increased sharply in 2011. Development & Integration declined significantly in 2011, whilst Outsourcing had done so in 2010. Turnover in other consulting services, however, doubled in 2011.

It is important to note that, according to a worldwide survey, HR Consulting was also one of the main consulting fields in 2007 (Gross, Poór, 2008), but neither the FEACO surveys nor our own included it in the top rankings. In the same study, the increasing use of IT Consulting and Outsourcing had been predicted based on 2007 data, and FEACO surveys show that this did, in fact, happen in Europe.

Before continuing the summary, we should take a look at the development of Management Consultancy in the Central and East European (CEE) region. Although the advocates of scientific management had made their first appearance in the early 20th century, the consulting market reached today's level only after the fall of the Iron Curtain. In the 1990s, the environment became more diversified and multinational organizations appeared and flourished, but the regime change also caused an economic downturn. Accession to the European Union also brought significant changes in these countries. (Poór, Milovecz, 2011)

In the FEACO surveys the following countries belong to the CEE region: Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, the Czech Republic, Greece, Hungary, Poland, Romania, Slovenia, Latvia and Macedonia. The total turnover of the region is about 2 to 3% of the whole European market, and the figure for Germany alone is some 10 times more than that of the CEE region as a whole.

The total revenue of the Hungarian consulting market in 2011 peaked at €235 million, which was about 8% of that of the CEE region. There was a decrease of 12% in 2010, but revenues rose by 9.3% in 2011 and a further increase of 10% was predicted for 2012. In Hungary the major consulting fields were the same as in Europe: the most significant were Business Consulting (50%), IT consulting (36%), Development and Integration (6%), Outsourcing (3%) and Other services (5%). (Poór et al., 2012)

The development of total turnover also shows the effects of the economic crisis, which brought significant changes. Client-knowledge is becoming more “democratic”, and new consulting methods are being sought. (Clarck et al, 2013: 111) With regard to the main consulting fields, the role of IT and Outsourcing Consulting is expected to increase, followed by Operations, Strategy, and Human Resources. (Gross et al., 2014)

Moreover, consultants must meet new requirements. Consultancy must be **outcome-oriented rather than problem-oriented**. Using a problem-oriented approach, the consultant identifies problems and offers solutions. However, it is more efficient when the consultant helps the client to identify problems himself and to achieve outcomes. Additionally, an erroneous problem definition can be eliminated by this approach. Another requirement is that consulting must be focused on the **co-creation of new knowledge rather than on expert knowledge**. Expert knowledge is not sufficient, since, to understand an organisation appropriate questions need to be asked. The resources which already exist can be mapped – s potentially useful building-block in the consulting process.

Further, in our uncertain world **knowledge is dynamic rather than static**. The regular consulting models are based on the paradigm that it is possible to influence the environment, but this view has now been discredited and there is no single solution which is good for all situations. Consultants are advocates of knowledge, but this is not simply one-way traffic (Sturdy, 2011).

The relationships between consultants and clients also become **more personal rather than merely professional**, and all of these changes in the client's requirements lead to the Inquiry Model of Consulting (Table 2), which meets the challenges of a more complex and uncertain world (Brooks, Edwards, 2014). According to this, specification will also become more important in consultancy – as asserted by Harvard University researchers (Clarck et al, 2013).

Table 2 Consulting models

Consultant Emphasis	The Advice Model	The Process Model	Inquiry Model
What is the Consultant's task?	Solve problem	Solve problem	Achieve the Client's desired outcome
What should the relationship between Consultants and Clients be?	Consultant transfers or delivers knowledge to Client	Consultant and Client work together on human relationships and organization dynamics	Consultant and Client are partners on technical and social/ human dimensions of change
Who is the expert?	Consultant is the expert brings knowledge and best practices	Consultant is a „helper” or process expert	Client and Consultant each bring different types of expertise to bear on achieving the outcome
How should the Client's capacity be increased?	Transfer knowledge in the form of product or service	Help clients learn to more effectively work together	Client and Consultant co-create knowledge needed to achieve the outcome
How much attention should the Consultant give to the uniqueness of each Client organization or community?	Low (knowledge transferable across contexts)	High	High

Source: Brooks, Edwards, 2014, pp. 19.

Looking back, we suggest that the definitions of management consulting do not reflect the approach of the Inquiry Model. The approach describing the consulting industry as it exists in Hungary should be the focus of further specific research. Here we have focused on the effects of the crisis - the prime example in our turbulent world.

2 Methods

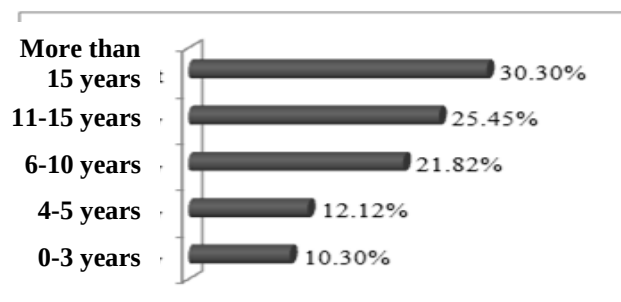
The Management and HR Research Centre at the University of Szent István (together with the Hungarian Consulting Round Table) conducted this benchmarking research in 2014. The main issue addressed was how consulting fields in general, and the role of management consultancy in particular, are changing in Hungary.

Hungarian consulting firms were asked to complete an online questionnaire for our survey. Participation was totally voluntary, finally we received 165 completed questionnaires and conducted 15 interviews. The research sample is not representative that shows the limits of research, of course. The data was statistically analyzed using Microsoft Excel and SPSS Version 17.0 software.

Firstly, we introduce the participants based on time elapsed since foundation, total staff and operating areas. We used the Hungarian classification to define company size. Secondly, we asked the participants about their reaction to crisis and within this about the employment strategy which was analyzed relating with company size. We also asked them about their total revenue and analyzed the relation with operating area and company size. Finally, we put questions about their future expectations of consulting market and image.

2.1 Characteristics of Consulting Firms

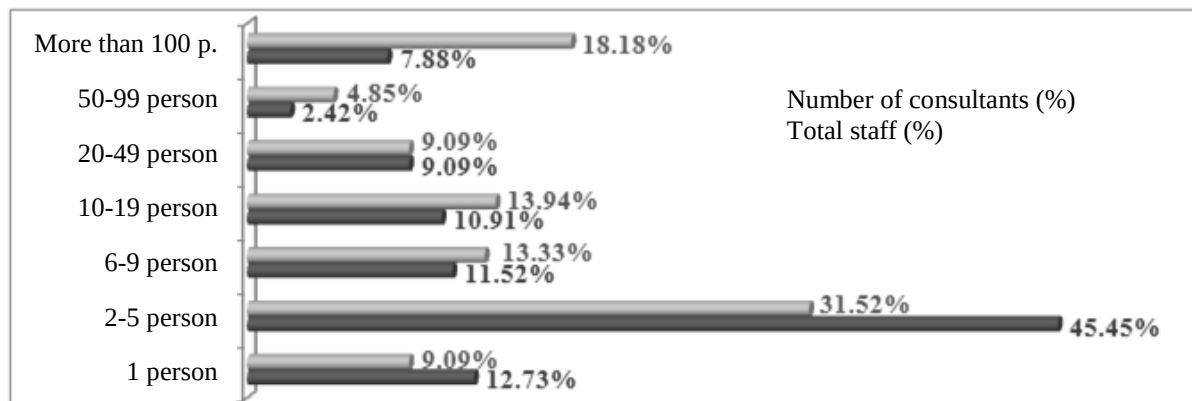
The majority of consulting firms (81.21%) have a Hungarian owner. In terms of the time elapsed since establishment (Figure 2) we can see that more than half of the firms were founded 11 or more years ago.



Source: Authors' own research, 2015

Figure 2 Time elapsed since establishment (year; n=165)

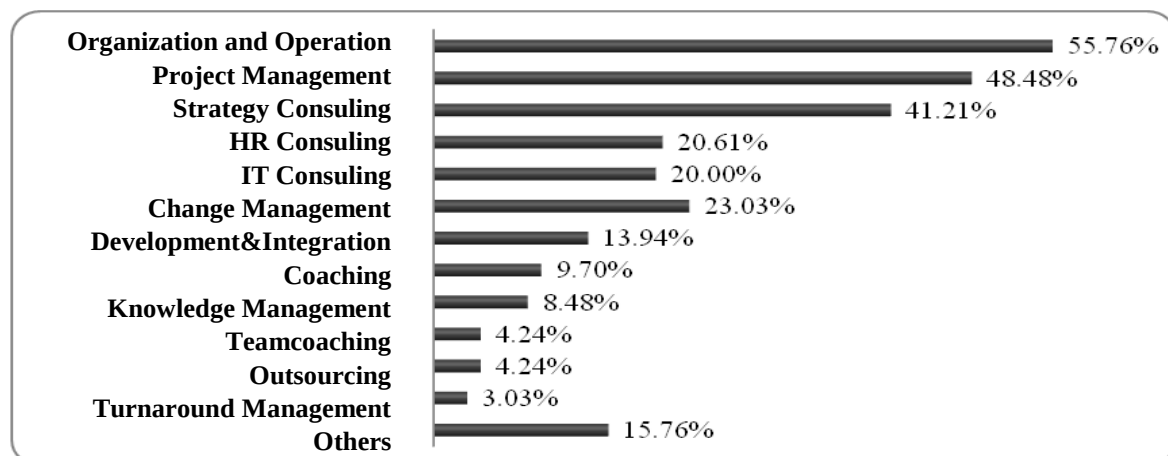
The total staff and - within this figure - the number of consultants are shown in Figure 3. More than half of the firms are micro-enterprises (1 - 9 employees), about one third is small or medium-sized companies (10-49 and 50-249 respectively) and only 12.73% of them are large companies (as categorised in Hungary). Other employers (alongside the consultants) are already employed in micro-enterprises (6-9 employees) and their part increases with the size of company. Moreover, fewer than half of all employers are actually consultants in large enterprises.



Source: Authors' own research, 2015

Figure 3 Total staff and number of consultants (%; n=165)

The most frequent consulting fields are Organization and Operations Management (OM - 55.76%), Project Management (PM - 48.48%) and Strategy Consulting (41.21%) based on Figure 4.



Source: Authors' own research, 2015

Figure 4 Consulting fields (%; n=165)

3 Results

3.1 Reaction to Crisis

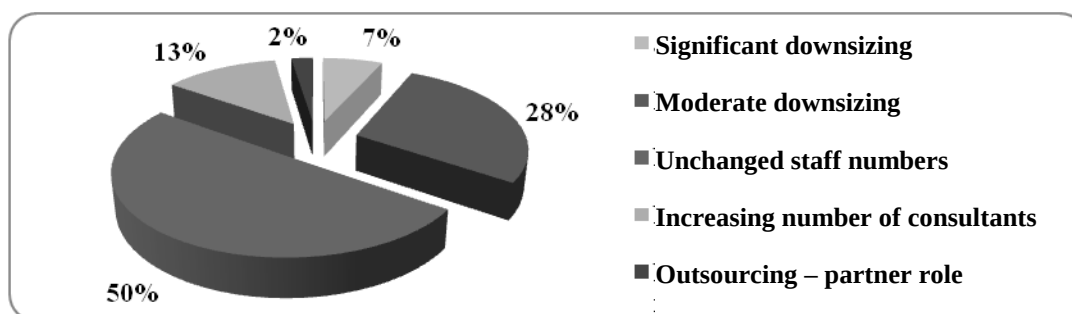
Every company needed to take action in response to the crisis in 2008, and this is shown in Table 3. The respondents were asked to evaluate possible steps to counter these effects on a five-point scale (1: not at all, 5: very much). We calculated the mean of the responses and then stored the values in sequence. In brief, most companies: launched new activities, redefined their strategy, entered new markets, cut costs or increased efficiency.

Table 3 Reactions to the crisis (“F”: frequency; “%”: distribution; n=165)

	Strongly disagree (1)		Disagree (2)		Neutral (3)		Agree (4)		Strongly agree (5)		Mean
	F	%	F	%	F	%	F	%	F	%	
There was no action	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0.00
Downsizing	97	58.79%	31	18.79%	26	15.76%	9	5.45%	2	1.21%	1.72
Launching a knowledge management programme	69	41.82%	42	25.45%	39	23.64%	14	8.48%	1	0.61%	2.01
Postponing projects, investment	76	46.06%	33	20.00%	33	20.00%	13	7.88%	10	6.06%	2.08
Freezing salaries, benefits	69	41.82%	31	18.79%	29	17.58%	18	10.91%	18	10.91%	2.30
Increasing education and training	52	31.52%	41	24.85%	42	25.45%	20	12.12%	10	6.06%	2.36
Paradigm shift of business	57	34.55%	35	21.21%	36	21.82%	28	16.97%	9	5.45%	2.38
Strengthening marketing efforts	40	24.24%	28	16.97%	48	29.09%	38	23.03%	11	6.67%	2.71
Entering new markets	37	22.42%	26	15.76%	39	23.64%	47	28.48%	16	9.70%	2.87
Redefining strategy	36	21.82%	25	15.15%	33	20.00%	50	30.30%	21	12.73%	2.97
Cutting costs	34	20.61%	28	16.97%	34	20.61%	46	27.88%	23	13.94%	2.98
Increasing efficiency	33	20.00%	26	15.76%	33	20.00%	53	32.12%	20	12.12%	3.01
Launching new activities	30	18.18%	18	10.91%	41	24.85%	55	33.33%	21	12.73%	3.12

Source: Authors’ own research, 2015

Few companies downsized because of the crisis. The employment strategy represents the levels of work-force reductions and one form of outsourcing when the employee becomes a service partner – usually as an individual entrepreneur (Figure 5).



Source: Authors’ own research, 2015

Figure 5 Employment strategy (%; n=165)

Coherence between company size and employment strategy was examined by cross-tabulation analysis and chi²-test. We assumed that larger companies downsized more employees due to the crisis.

There is only a weak link between the two variables with a significance level of 0.016, where Cramer’s V is 0.224 (Table 2). The number of employees did not change in some two-thirds of the microenterprises (66.3%) – not surprising if only one person is employed in these firms. Small enterprises are showed moderate downsizing (39.5%), but 34.2% of these made no change in the number of employees. Most medium-size (41.2%) and large enterprises (47.6%) downsized moderately. In brief, our hypothesis was confirmed. This statement is consistent with another survey, conducted in 566 companies in 2008/2009, which also found that mostly larger companies reduced their workforce due to the crisis (Fodor et al., 2011).

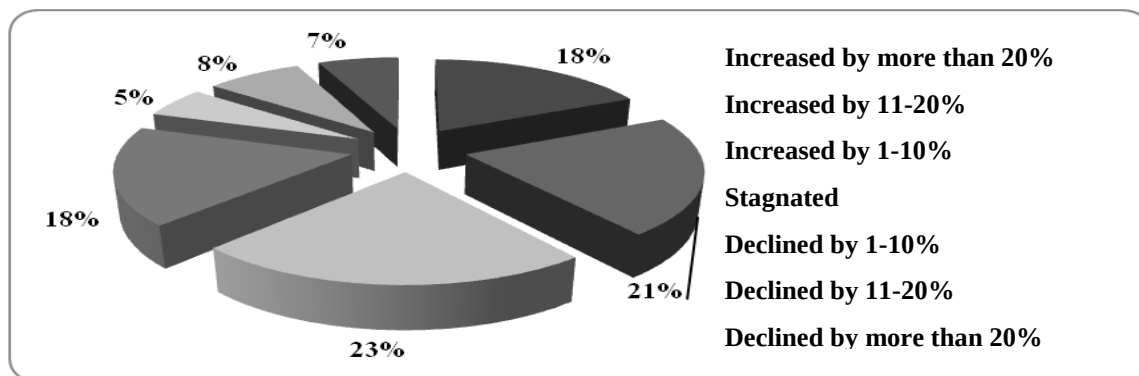
Table 4 Cross-tabulation analysis of total staff and employment strategy

		Employment strategy replying on crisis					Total
		Significant downsizing	Moderate down-sizing	Unchanged staff number	Increasing number of consultants	Outsourcing - partner role	
Company size	Micro Count	6	14	59	9	1	89
	% within: Company size	6,7%	15,7%	66,3%	10,1%	1,1%	100,0%
	Small Count	2	15	13	7	1	38
	% within: Company size	5,3%	39,5%	34,2%	18,4%	2,6%	100,0%
	Medium-size Count	2	7	5	2	1	17
	% within: Company size	11,8%	41,2%	29,4%	11,8%	5,9%	100,0%
	Large Count	1	10	6	3	1	21
	% within: Company size	4,8%	47,6%	28,6%	14,3%	4,8%	100,0%
Total Count		11	46	83	21	4	165
% within: Company size		6,7%	27,9%	50,3%	12,7%	2,4%	100,0%

Source: Authors' own research, 2015

3.2 Recovering from the Crisis – Experience in 2013

The research carried out found that there was no statistical link between the size of the company and the total turnover analyzed by cross-tabulation ($P=0.074$). Similarly, there was no relation between the total turnover and areas of activity based on cross-tabulation analysis. Overall the consulting industry has started to grow again quite significantly. The revenue of most companies rose in 2013 compared to the preceding year (62.42%), whilst 17.58% stagnated and 20.00% declined (Figure 6).



Source: Authors' own research, 2015

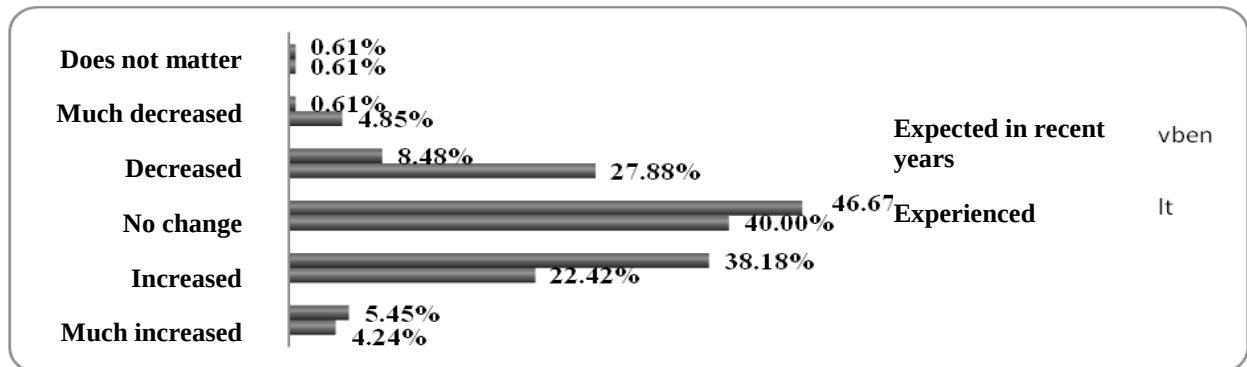
Figure 6 Changes in revenue between 2012 and 2013 (%; n=165)

3.3 Future Expectations

Our study was conducted in early 2014, and so, in asking the consulting firms about their future expectations, we were mainly interested in their assumptions for 2014. In respect of that particular year, increased turnover was predicted in the fields of: Organization and Operations, Project Management, Strategy Consulting and IT Consulting. On the other hand, they did not expect changes in the fields of Outsourcing, HR and Change or Turnaround Management.

We had formulated two hypotheses in relation to expectations. Firstly, we assumed that there is a link between the more optimistic expectations of increasing demand and changes to 2013 turnover. Finally, this hypothesis appeared to fail.

Consulting services require trust - which depends on professional judgment – and so we tested the link between the image of consultancy and these future expectations. Consultants were asked to evaluate the image of the profession as experienced over the last few years and expected for the future (Figure 7). In our second hypothesis we had assumed a link between image and revenue changes in 2013, and we tested this using cross-tabulation analysis.



Source: Authors' own research, 2015

Figure 7 Recent and expected image of consultancy (%; n=165)

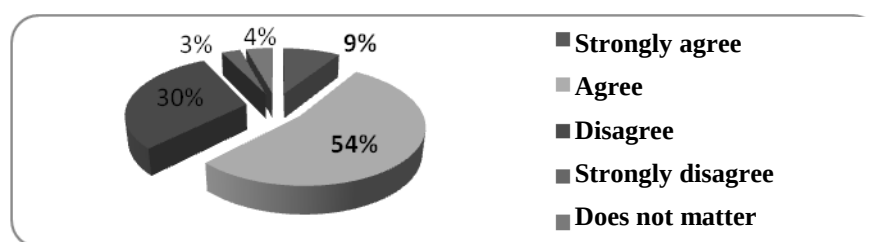
There is no link between changes of revenue and the image over the last few years ($P=0.070$). By contrast, there is weak coherence with the image expected for recent years ($P=0.006$). 46.7% of consulting firms expected stagnation in terms of their image, but 38.2% of them expected some increase. The picture varies depending on revenue: only those firms which had increased their revenue in 2013 expected an improved image. In summary, the higher the revenue achieved by consulting firms in 2013, the better the future image expected.

Table 5 Cross-tabulation analyses of turnover changes and future expectations of image (n=165)

		Image - future expectations						Total
		Does not matter	Much decreased	Decreased	No change	Increased	Much increased	
Changes of total turnover between 2012 and 2013	Decreased by more than 20%	Count 0	Count 1	Count 2	Count 9	Count 0	Count 0	Count 12
	% within: Total turnover	,0%	8,3%	16,7%	75,0%	,0%	,0%	100,0%
	Decreased by 11 to 20%	Count 1	Count 0	Count 0	Count 8	Count 4	Count 0	Count 13
	% within: Total turnover	7,7%	,0%	,0%	61,5%	30,8%	,0%	100,0%
	Decreased by 1 to 10%	Count 0	Count 0	Count 0	Count 5	Count 4	Count 0	Count 9
	% within: Total turnover	,0%	,0%	,0%	55,6%	44,4%	,0%	100,0%
	Stagnated	Count 0	Count 0	Count 5	Count 9	Count 15	Count 0	Count 29
	% within: Total turnover	,0%	,0%	17,2%	31,0%	51,7%	,0%	100,0%
	Increased by 1 to 10%	Count 0	Count 0	Count 1	Count 17	Count 18	Count 2	Count 38
	% within: Total turnover	,0%	,0%	2,6%	44,7%	47,4%	5,3%	100,0%
	Increased by 11 to 20%	Count 0	Count 0	Count 5	Count 14	Count 12	Count 4	Count 35
	% within: Total turnover	,0%	,0%	14,3%	40,0%	34,3%	11,4%	100,0%
	Increased by more than 20%	Count 0	Count 0	Count 1	Count 15	Count 10	Count 3	Count 29
	% within: Total turnover	,0%	,0%	3,4%	51,7%	34,5%	10,3%	100,0%
	Total	Count 1	Count 1	Count 14	Count 77	Count 63	Count 9	Count 165
	% within: Total turnover	,6%	,6%	8,5%	46,7%	38,2%	5,5%	100,0%

Source: Authors' own research, 2015

We also asked consultants whether, in their opinion, clients would regard consultants as representatives of knowledge, or not (Figure 8). About two-third of those responding held that clients would regard consultants as the most important advocates of management knowledge.



Source: Authors' own research, 2015

Figure 8 Consultants as advocates of knowledge (%; n=165)

Moreover, there is a link between judging consultant as advocates of knowledge and the future expectations regarding image. Moderate coherence exists between the variables based on cross-tabulation analysis ($P=0.000$). If respondents have higher expectations of image, they agree more strongly that clients regard consultants as advocates of knowledge.

Table 6 Cross-tabulation analysis between future expectations of image and future opinions of consultants

		Consultants as advocates of management knowledge for the future					Total
		Does not matter	Strongly disagree	Disagree	Agree	Strongly agree	
Image - future expectations	Does not matter Count % within: Image	1 100,0%	0 ,0%	0 ,0%	0 ,0%	0 ,0%	1 100,0%
	Much decreased Count % within: Image	0 ,0%	1 100,0%	0 ,0%	0 ,0%	0 ,0%	1 100,0%
	Decreased Count % within: Image	2 14,3%	1 7,1%	8 57,1%	2 14,3%	1 7,1%	14 100,0%
	No change Count % within: Image	2 2,6%	3 3,9%	31 40,3%	37 48,1%	4 5,2%	77 100,0%
	Increased Count % within: Image	2 3,2%	0 ,0%	11 17,5%	47 74,6%	3 4,8%	63 100,0%
	Much increased Count % within: Image	0 ,0%	0 ,0%	0 ,0%	2 22,2%	7 77,8%	9 100,0%
	Total Count % within: Image	7 4,2%	5 3,0%	50 30,3%	88 53,3%	15 9,1%	165 100,0%

Source: Authors' own research, 2015

Conclusion

Every consulting firm had to take counter-measures in response to the economic crisis, and most companies launched new activities, redefined their strategy, entered new markets, cut their costs or increased efficiency. The good news is that firms usually did not downsize independently of size.

Apparently, this kind of engagement was successful, as the majority of firms achieved revenue growth - which indicates that the crisis had been overcome. Continuously, increase is shown independently of consulting field that also proves an overall growth in consulting industry.

Interestingly, in Hungary the most in demand services differ from global and regional trends. While generally the role of IT and Outsourcing Consulting is expected to increase, followed by Operations, Strategy, and Human Resources, in Hungary the share of IT is lower and demand for HR consultancy appears abnormally low in these terms, but Project Management Consulting is outstanding.

Nevertheless, due to consultancy based on mutual trust, it is considered that judgement of consultants can decide future of this industry. It bodes well that the image of the profession was, in general, assessed positively and this in itself can help to strengthen the Hungarian consulting industry.

Due Kipping and Kirkpatrick (2013) and Hinnings (2005) there may be a general trend towards more corporatization of organizing and management of professional consulting organizations. We believe that our research has contributed to a better understanding of this evolution in Hungarian consulting world.

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Business and entrepreneurship development of Czech SMEs through participation in international fairs and exhibitions

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Abstract

Purpose of the article Successful entry into the foreign market is a promising perspective of business development and entrepreneurship for the Czech small and medium enterprises (SMEs), but there are also barriers, like knowledge of the language or environment, information, experience, different legislation, and high cost of entering in a foreign market. Performing analytical research shows that recent scientific literature has limits regarding solution of entry costs for marketing and promotion.

Methodology/methods The study uses the method of analysis of primary and secondary data and structured data collection in the form of streamlining the scientific literature related to the topic of internationalization and barriers to market entry. Methods for collecting data questionnaire and its evaluation using statistical methods.

Scientific aim The study aims to clarify the issue of Czech SME entry to foreign markets, with an emphasis on business and entrepreneurship development of Czech SMEs through participation in international fairs and exhibitions and explores the possibilities to manage costs of the marketing and promotion, with regard to the possibility of using grant.

Findings Using the survey, the study examines 338 Czech enterprises, which acquired financial assistance thanks to grant programme Marketing II, between 2010 -2014. The work compares the results with those businesses that have not received grant aid, or did not apply for it and opted for a different type of promotion.

Conclusions With extensive questionnaire the research paper examines, whether this form of grant support of participation in international fairs and exhibitions is an effective solution when putting Czech SMEs on foreign markets, which promotion solutions chose those firms that have not benefited from subsidies, what kind of support would be welcome, what success was and what the limits are. The work opens up new possibilities for research in this area.

Keywords: Internationalization, SME, Marketing, Market, Costs, Export, Fairs

JEL Classification: M2, M3, F6, O1

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Introduction

One of the latest phenomenons of the age of globalization is internationalization. According to Jurek, (2012), is this concept defined as adjusting the products or services to multiple nations and markets. Nový akademický slovník cizích slov (Kraus, 2008), explains internationalization as a process of turning something into something international. This terminology came into use in the 1920's for the purpose of defining cross-border relations between economies. Starzyczna (2010) supports this definition by saying that internationalization means expanding the company business abroad. This opinion is also shared by Ruzzier et al. (2006), who expands this definition by using the word process. According to him, internationalization is cumulative process, which consists of activities of companies which, in order to increase their profit, have started expanding their activities to foreign markets.

Lopez et al. (2008) divides the companies' approach to internationalization into two categories: first of them is evolutionary approach. In this case the company starts at domestic market, where it initially grows, and later expands to foreign market. Using the other approach, the company is founded as export oriented and enters the foreign market at the time of founding the company. Such companies are called "born-globals", however their occurrence is very unique. The process of internationalization is not only about import and export. It also includes international cooperation, taking part in successful cooperation networks, finding new competitive market entries, new technologies and researching mutually supporting processes (Evropská komise, 2008).

There are many papers, which are dealing with the topic of internationalization, like „Gradually Internationalizing ‚Born-Global‘ Firms: An Oxymoron“, from Hashai and Tamar (2004), or The Role of Path Dependency and Managerial Internationality, from Hutzschenreuter et al. (2007). The text giving the summary of internationalization topic is „Bringing History into International Business“, by Jones and Khanna (2006). The next interesting studies are for example „Internationalization: Conceptualizing and Entrepreneurial Process of Behaviour in Time“(Jones and Coviello, 2005); „The Resource-Based View and International Business“(Peng, 2001), or „The Internationalization Process of Born Globals: A Network View“(Sharma and Blomstermo, 2003).

Papers researching the topic of internationalization of Czech companies are for example: Internationalization in the Process of the Czech Retail Development, Símová (2010). This paper deals with the evolution of the internationalization process between years 1990 and 2010. Other scientific papers: The paper the specifics of internationalization process of Czech SMEs with the focus on strategies used in foreign markets, Kubíčková and Peprný (2006), examines, using questionnaires, the strategies of Czech SMEs used during the process of their internationalization. The paper Models of Czech companies' internationalization, Zapletalová, (2015), evaluates the usage of different approaches to internationalization, while working with the theory of evolution and born-globals approach. This study proves that the born-globals approach is very rarely used by Czech SMEs.

Studies show correlation between the process of internationalization and the increase in effectivity of SME. There is also positive influence on companies' competitiveness, long-term sustainability and growth of the company. Expanding to foreign markets is still very big obstacle for many companies.

The first part of this study focuses on the topic of internationalization of Czech SMEs and analysis of the available scientific articles with the emphasis on the analysis of the market entry barriers. The second part of this study will focus on one of the part of the internationalization process, which will be exporting activities done by Czech SMEs. The following part will focus on various programmes for support of export development, which are available for Czech SMEs. One of them is grant programme Marketing which provides funding of upto 50 percent of the costs of participation of a company on international exhibitions and fairs.

The research part of this study in detail describes the used methodology, the sampling frame of the companies, which took part in the questionnaire research and analysis of the obtained data.

This study aims to prove if the grant funding for taking part in international exhibitions and fairs has any effect on the Czech export and helps to remove the market entry obstacles while expanding to foreign market. It also aims to find out what influence this grant funding has on companies, if there is any other way of supporting export which would benefit the companies even more and what is the awareness of Czech SMEs of export possibilities and other government-supported programmes related to export.

1 Theory of internationalization in Czech Republic

For Czech Republic, which represents only a small portion of global economics, is involvement in international markets very important in order to gain long-term sustainability, prosperity and economic growth, because it means gaining potential for Czech companies to grow, increase their production, local sales, quality of their products and services with regard to competitive environment (Calof, Beamish, 1995). Very important disciplines in relation to internationalization are export and import of goods and services. When it comes to the relation between export of goods and services and gross domestic product (GDP) is Czech Republic amongst the countries with the highest ratios.

According to Czech Statistical Office (Český statistický úřad, 2014), the export in year 2010 was equal to 79 percent of Czech GDP. This information is confirmed by Czech association of SMEs (AMSP, 2015). For comparison, in Germany it was only 50 percent of GDP. Since export is very important for Czech Republic, this article will focus on the possibilities Czech SMEs have in relation to their export potential. According to Toulová et al. (2015) there are several barriers, which are making the export more difficult. According to questionnaire research with 135 Czech SME participants are the biggest barriers when entering foreign market the lack of knowledge of the local language (40,9%) and the lack of knowledge of the environment (39,8%). In third place are the costs of entering the market and marketing (34,1%). In the following places are administrative obstacles (29%), cultural differences (14,8%), geographical distance (8%) and problems with finding business partners. Toulová followed up on a research conducted on San Diego State University in 2014, Musteen et al. (2014), which tested 169 Czech SMEs and came up with a hypothesis that it is necessary for SME to obtain enough information and to analyse the local market in order to eliminate the initial barriers. The importance of being informed is also emphasised in an article by Raff, et al. (1999), which states that despite the governmental support, the importer is still in disadvantage compared to local manufacturers, who have already created the relationship to their customers. Gaining similar reputation is a very lengthy and very expensive process. This idea is also supported by research conducted by Kneller and Pisu (2011), which shows that the expenses on export are lower in companies which already have experience with export, than in companies which have only just started exporting.

The topic of dealing with barriers is very important and is worked on in other articles and studies. The cultural distance, for example, is being elaborated on by Tihanyi et al. (2005), who analysed the correlation between the cultural distance and the way international company works and he came up with the idea that in case of technologically demanding fields the cultural distance can become a problem, but in case of other fields of entrepreneurship can the cultural diversity can be very useful for the company. Zhao et al. (2004) mentions another barrier: in this case it is the choice of the companies' legal form while entering the foreign market. This article will focus only on private limited company (Ltd.) because it is most commonly used legal form of company both worldwide and in Czech Republic.

Journal of Behavioral finance (Westerhoff, 2003) published an article, which adds yet another barrier to the topic of internationalization and foreign market entry. It is a psychological barrier related to the Foreign exchange market. Another very interesting article handling the topic of foreign market entry and internationalization was written by Arndt, Buch and Mattes (2012) and it deals with German companies and their relation to barriers, productivity, job market and foreign market entry costs. This article concludes that German companies are not repelled by the initial costs, because of their attitude to financial reserves, availability of credit unions and their access to loans. The lack of government support as a problem for internationalization is also being mentioned in an article by Cranmer (2008). This article analyses export possibilities for companies in eastern regions of Canada. The connection between internationalization of Czech institutions and the influence of projects conducted by European Union is the main topic of study by Šťastná (2011). This study mostly focuses on the university sector and gives overview of the possibilities of European programmes such as Erasmus, Leonardo, Socrates and so on, which provide student and teacher exchanges in a form of study exchange or traineeship. Other available articles mention the topic of eliminating foreign market entry barriers for Czech SMEs only briefly or not at all.

On the basis of thorough analytical research of scientific articles on the topic of foreign market entry barriers have been identified problems which show that there has not been done enough research on eliminating the marketing costs related to entering foreign market, even though that according to the research done by Toulová et al. (2015) 34, 1 % of the respondents consider it to be very important barrier. This article deals with the possibilities of propagation and marketing on the foreign market. One of the possible solutions is the usage of the grant programme Marketing, which is designed to help Czech SMEs to be more competitive on foreign markets by financially supporting their attendance on international exhibitions and fairs. This project is sponsored by European regional development fund and by the Ministry of Industry and Trade of the Czech Republic. The programme Marketing is focused on expanding the activities of Czech exporters on foreign markets and aims to enhance the export opportunities for Czech SMEs.

1.1 Export strategy of Czech Republic

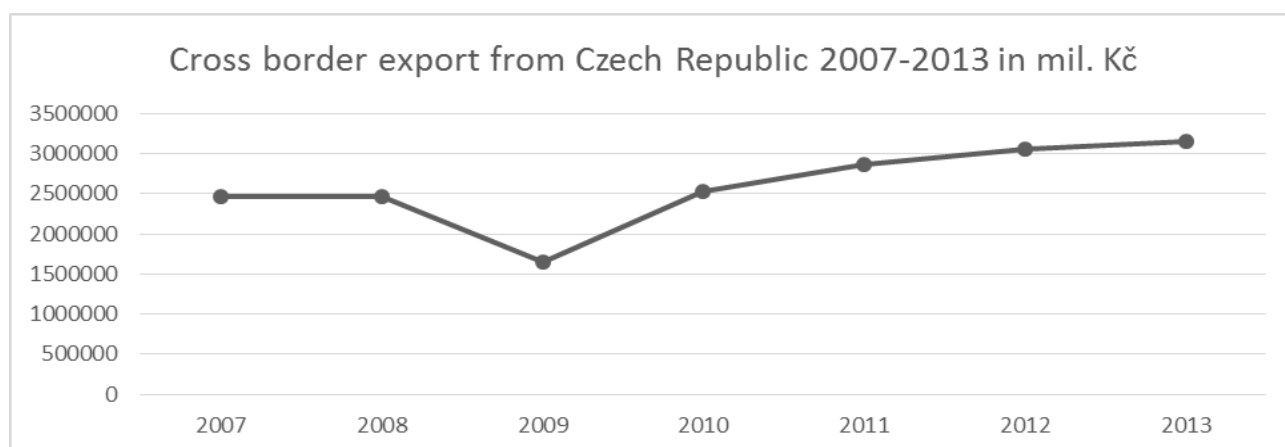
According to the Report on implementation of the Export Strategy of the Czech Republic in year 2013, published by the Ministry of Industry and Trade of the Czech Republic (MPO, 2014), there strong proactive policy of supporting the export done by Czech SMEs. The government of Czech Republic has defined three fundamental pillars of export policies, which include coverage for export, development of export and support of other business opportunities. Each of these pillars has its sub-programmes, which means there are 12 export-supporting projects in total. Export strategy of Czech Republic also defines high priority markets onto which should Czech exporters concentrate. These markets are identified on the basis of their growth potential, absorption capacities and compatibility with Czech economy. Even though the markets within European Union are still the most important outlets for Czech export, it is necessary to diversify and expand to another markets. MPO therefore defined 12 high priority countries such as Brasil, India, Russian Federation and another 25 countries of interes such as Australia, Egypt and Norway.

The report also describes the irreplaceable role of the CzechInvest agency, which financially aids international cooperation and whose clients in years 2012 and 2013 were 15 out of 20 biggest Czech exporters.

As Časnochová (2013) states, export is especially crucial for small and open economies. Časnochová also analyses the Czech export strategy and compares it with Slovak export strategy. Her study emphasises the importance of governmental support in both the countries, especially in the form of favoured loans, which are provided by Export Guarantee and Insurance Corporation and Czech national bank in Czech Republic and by Eximbanka in Slovakia. The research, which focused on the time between years 2000 and 2011 showed, that compared to other European countries is the governmental support low. During this time, only 10 % of the governmental support was dedicated to SMEs. Šudřichová (2011) points out, that the governmental support for SMEs started was increased during the time of the Great Recession in years 2008 and 2009.

Scientific work by Janda et al. (2013), which is focusing on export from Czech Republic points out the importance of export loans, which have positive influence on Czech export. This research, however, did not cover the topic of awareness of the export loan possibilities. The results of the research show, that the higher the GDP, the shorter the distance and the lower the political risk are, the higher export from Czech Republic. Similar research conducted by Křístková (2013) confirms the idea of pro-export policies. In other words, the stimulation of export of products of important Czech industrial fields is beneficial for small, export-oriented economy of Czech Republic.

The following graph nr. 1 shows the development of international trade in Czech Republic in the field of export of goods and services. The graph clearly shows that the amount of export (shown in millions of Czk) has been steadily growing. The only exception was year 2009. The reason was the financial crisis and the Czech export followed the global trend in international trade. Despite the growth, there is still potential which can be used with the right support. According to the estimate given by European committee in 2008, only 20 percent of European SMEs exports their products. (Český statistický úřad, 2014)



Source: Own work based on analysis of data available on Kurzy, 2015

Graph 1 Cross border export from Czech Republic 2007 – 2013

1.2 Business and Entrepreneurship Development of Czech SMEs through Participation in International Fairs and Exhibitions

Removing the foreign market entry barriers, such as initial costs and the lack of experience, is supported by MPO in the manner of participation programme of Czech Republic at international exhibitions and fairs. This programme is rather small one and there are only about thirty events per year and the resulting financial aid can vary from one subject to another. Czech exporters can also use program provided by CzechTrade agency, which supports companies' marketing readiness for foreign market entry. (CzechTrade, 2015). Unfortunately, not even this programme managed to meet the needs of Czech exporters and therefore new project, supported by European Union, has been announced. The programme called Marketing focuses on supporting Czech SMEs' export to foreign markets and securing new export possibilities. The grant is provided by the Ministry of Industry and Trade of the Czech Republic (CzechInvest, 2014), while the intermediary is semi-budgetary organization CzechInvest. The basis of the programme has been laid in the priorities of the operation programme Entrepreneurship and Innovation 2007-2013 and it is supported by European regional development fund. This project supports the attendance at international fairs and exhibitions, making of the promotional materials and the transport of the goods. The support equals upto 50 percent of the total costs. The minimal amount of financial support is 300 000 Czk. The upper limit has not been set.

The projects supported by European Union (EU) strongly develop the exporting potential for Czech Republic. According to Region Today newspaper (2014), joining the EU meant the increase of the export-GDP ratio from 59 % in 2004 to 79 % in 2014. The largest growth of 26 % happened during the first year after joining the EU.

Study by Morley and Morgan (2008) also focuses on the correlation between export, productivity and EU financial support in agriculture and explains the surplus in supported countries and deficit in countries which do not receive any financial aid.

The following part of this study focuses on the question of what influence does the attendance on international fairs and exhibitions have on Czech SMEs and if the operational programme Marketing develops the activities of Czech exporters and increases the usage of the export possibilities of Czech SMEs.

2 Research study

The national still represent significant barrier for many of Czech SMEs while expanding their activities. These companies are dependent on local markets at which they now have to face international competition, which rather limits their potential of further growth and increasing their competitiveness.

The aim of this research study is to find out what is the awareness of Czech SMEs of export possibilities and other government-supported programmes related to export, if they took part in the Marketing operational programme, which provides financial aid for attending international exhibitions and fairs, and if this programme does actually support Czech export, remove market entry barriers and what influence does this programme have on the companies which took part in it.

2.1 Methodology

This scientific research uses the methods of analysing primary and secondary data. Secondary data were obtained by synoptic data collection by researching scientific literature, electronic sources, academical studies, scientific articles and statistical information. Methods of synthesis and deduction have been used to complete this study and the continuity of the topics. Secondary data collection clarified the topics of internationalization, finding out the limits of these works and connecting it to the actual study. The primary data collection (i.e. newly obtained data) has been done by using questionnaires and then evaluated by using statistical methods. To evaluate the outcome of this research, quantitative research methods, such as causal analysis and statistical methods in computer program SPSS Statistics, in order to get clear results, have been used. In order to be able to analyse the correlation between particular phenomenon, it is necessary to define the object of the research, research questions and the aim of the research.

2.2 Object of research

The set of respondents is represented, according to the rules for obtaining the grant, by small and medium sized enterprises, private limited companies, based in Czech Republic, not based in Prague and older than 2 years. The operational programme only applies to several main fields of entrepreneurial activities as defined by CZ-NACE. This fact is accepted by the research. The selected areas are: Section B: Mining and quarrying, Section C: Manufacturing, Section D: Manufacturing and distribution of electricity, gas, heat and air, Section F: Construction, Section J: Information and communication activities, Section M: Professional, scientific and technical activities, Section N: Administrative and supporting activities, Section S: Other activities.

All of the respondents of this questionnaire research use the evolutionary approach to internationalization and expansion to foreign markets. They can be divided into two groups.

The first group (Group A) represents the companies, which have successfully taken part in the operational programme Marketing II in between years 2010 and 2014. In total, 692 companies have taken part in the programme, but for the purpose of this research only the 503 companies, which use the most common legal form (i.e. limited companies) were selected. These companies received in total 497 843 180 Czk, which means 989 000 Czk per one company. However, some companies received more than one grant and therefore it was necessary to remove the duplicate data and the data set has been narrowed down to 338 companies, which have been asked to take part in the research. Only 125 companies replied and their submitted data have been used for the actual analysis. The remaining 213 companies have been asked repeatedly, but did not respond. For the actual analysis, the 125 companies, which have responded, are considered to be the initial value of 100 %.

The second group (Group B) represents the companies, which have asked for the grant and did not receive it, or did not apply for it at all. The set of respondents in this case has been selected by random selection from all the companies which fulfill the given criteria, such as legal form, base of the company, size of the company and classification according to CZ-NACE. To make the results comparative, the request for participation in the research has been sent to 338 companies. The amount of responses was lower and only 68 companies took part. From now on, these initial 68 companies will be considered to be 100 %.

The data has been turned into a graph nr. 2 for illustrating the amount of returned questionnaires. The graph clearly shows that the group A was more successful at participating at the research. This can be explained by the fact that they have received the financial aid from the Marketing programme and are now more motivated to take part in the follow-up research than the companies that did not have anything to do with this programme.



Source: Own work

Graph 2 Groups A and B amount of returned questionnaires

The questionnaire was created using Google Docs and sent to the publicly available email addresses of the selected companies. There was slight variation between the questions for groups A and B. The questionnaire for group A consisted of 20 questions, while 15 of them were closed check-box-type questions with the possibility to mark multiple answers. The remaining 5 questions were open questions. The questionnaire for group B (companies which did not receive the grant) consisted of 13 questions, while 3 of them were open questions and the rest were closed check-box-type questions. The average time to answer to all the questions was 7-15 minutes. The following data processing was done using computer program SPSS Statistics, which enables statistical data processing.

The aim of this questionnaire research was to find the answer to the question if the grant project Marketing does have positive influence on expanding the activities of Czech exporters and increases the usage of the possibilities Czech SMEs have.

SMEs are divided into groups of micro, small and medium sized enterprises in accordance with the Recommendation No. 2003/361/EC (European Commission, EC, 2003). The basic criteria for this classification are the amount of employees, annual turnover and the total assets. The classification is shown in table 1.

Table 1 Small and medium sized enterprises

Category	Employees	Annual turnover	Total assets
Micro enterprise	< 10	≤ 2 mil. EUR	≤ 2 mil. EUR
Small enterprise	50 – 250	≤ 10 mil. EUR	≤ 10 mil. EUR
Medium sized enterprise	> 250	≤ 50 mil. EUR	≤ 43 mil. EUR

Source: Own work according to www.ec.europa.eu

3 Results

The first question set by this research was to find out what are the biggest barriers to enter the foreign market. Group A, despite receiving the grant, stated in 54 % of the answers, that the biggest barrier is the initial cost of entering the new market. 21 % answers stated that the biggest barriers are created by Czech Republic, such as political situation, legislative changes, CNB inventions etc. 13 % of the answers were the lack of information and experience. 17 % of the respondents stated that there are other barriers, such as lack of qualified personell in the given country. Group B was given the same set of questions and even though these companies did not receive any grant, the answers were very similar: 59 % high initial costs, 8 % legislation changes, 21 % the lack of information and knowledge and 12 % other.

These results contradict the results of the research conducted by Toulouva et al. (2015), where 40,9 % of the respondents said that the biggest barriers were the lack of knowledge of the language and 39,8 % said that it was the lack of knowledge of the environment. None of the respondents gave this answer, even though it was available amongst the pre-defined answers.

Another question was aiming to find out if the project Marketing II helped to increase the amount of export performed by Czech SMEs. Prevailent answer in group A was that the project only helped develop the existing export activities. 4 % stated that it was their first and one-time experience with foreign markets, 4 % stated that the project helped to start export activities and the remaining 4 % stated that it helped those gaining new experiences, but not actual export transpired. On the other hand there is correlation between attending the international fairs and exhibitions and the increase of income of the company, which was observed by 58 % of the respondents.

The hypothetical question “What would they do if they did not get the grant”, which was designed to test the companies’ economy and efectivity of using the financial sources, 58 % responded that they would spend less on attending the international fairs and exhibitions, 21 % stated that they would try to support their exporting activities in some other way and 21 % stated that they would attend the fairs and exhibitions with or without the financial support.

Only 22 % of the companies in group B is actually exporting their products, 34 % are considering the possibilities of exporting and 44 % respond that their service or product is intended only for the local market. This group was then asked about how they did, or would, start or support their exporting activities without the financial support and only 21 % stated that they would attend international exhibitions and fairs.

This questionnaire also uncovered great potential in informing the enterprises about the grant programmes and export possibilities. 64 % of respondents in group B stated, that had they known about the Marketing II project, they would have tried to receive the financial aid.

The issue of informing Czech SMEs seems to have great potential. Even though the group A took part in the project Marketing II, they are not aware of other programmes created by Czech government in order to support export from Czech Republic. Out of 12 possible options, such as CzechTradem SOLVIT center, Czech export bank, Export Guarantee and Insurance Corporation, Single contact point service, portal www.businessinfo.cz etc. 79 % responded that they are only familiar with the CzechInvest programme and mostly only because the grant agencies contact the enterprises with the offer of preparing the application for the grant. Group B delivered very similar results: 60 % is familiar with the CzechInvest agency, but is not aware of the programmes set up by Czech government in order to support the exporting activities. For illustration: table 2 shows the analysis of the answers to some of the research questions.

Table 2 Analysis of the answers to some of the research questions

What are the biggest barriers to enter foreign market for your enterprise:	Group A	Group B
High initial costs	54%	59%
Lack of knowledge of language and environment	0%	0%
Lack of experience and information	13%	21%
Barriers created by Czech Republic, such as political situation, legislative changes, CNB interventions	21%	8%
Other	17%	12%
Project Marketing was for your enterprise:		
Initial impulse to start exporting	4%	
First and one-time experience with foreign markets	4%	
Support of already ongoing exporting activities	88%	
Obtaining new information and knowledge, not for starting exporting activities	4%	
Other	4%	
The evaluation of the attendance of international fair:		
Sales increased by less than 10 %	33%	
Sales increased by more than 10 %	25%	
Sales reduced	0%	
There was no correlation between the attendance and the sales	38%	
If you did not receive any financial support in the Marketing project:		
We would not have considered the exporting possibilities	4%	
We would have spent less on the propagation at the international fairs	58%	
Nothing would have changed, we would have participated anyway	21%	
We would have supported the export in some other way rater than attending the fair	21%	
Have you thought about exporting your goods and services?		

No, our products are intended for local market only	44%	
Yes, we have been exporting for more than two years	18%	
Yes, we have just started exporting	4%	
Yes, but we cannot start without financial support	24%	
Yes, but we need some other kind of support	10%	
What strategy would you use if you intended to enter foreign market:		
We would attend international fairs and exhibitions	21%	
We would find and hire local representative	38%	
We would use cooperation with other companies	20%	
Other	21%	
Have you ever heard of the project Marketing, which can provide you with upto 50 % of the funding needed for attending international fair?		
Yes, we have tried to get this grant	4%	
Yes, but we have decided not to apply because:	0%	
No, but had we known, we would have tried to apply for the grant	64%	
No, we have not and we are not interested	32%	
Which of the support programmes set up by Czech government to support Czech SMEs' exporting activities are you familiar with?		
CzechInvest agency programmes	79%	60%
CzechTrade agency programmes	63%	30%
Single contact point service (JKM)	4%	0%
SOLVIT centres	0%	0%
Product Contact Point	0%	0%
One Stop Shop for exporters	0%	0%
Green line for export	0%	0%
Czech export bank	21%	10%
Export Guarantee and Insurance Corporation	17%	4%
60 MPO centres abroad	17%	0%
I am familiar with the services of exporters portal, which can be used free of charge	0%	10%
I know all three pillars of Czech pro-export policies and all twelve programmes	0%	0%
Other	4%	12%

Source: Own research

4 Conclusion and discussion

According to the empirical research conducted on 125 enterprises, which have been provided with grants to be able to participate at international fairs and exhibitions and used it mostly at the markets within European Union, and 68 enterprises, who were not provided with such funding, it is not possible to conclude that the funding programme Marketing II, which was going on between years 2010 and 2014, removed or at least lowered the barrier of the high initial costs while entering new foreign markets. Both groups have agreed, that this barrier is still the biggest obstacle on the way of Czech SMEs to new markets and it was not lowered by the financial grant, even though the cost of attending the international fair was lower.

The questionnaire research also showed, that the project Marketing supported the already existing exporting activities of Czech SMEs and the attendance at international fairs and exhibitions had positive effect on the increase of sales. This project was not the impuls for starting the export, as it was initially intended. According to the research there is correlation between the awareness and starting the exporting activities. Enterprises, which have participated in the Marketing II project, were mostly approached by grant agencies, which have chosen them on the basis of their already ongoing exporting activities. Had the communication from MPO been set up in a better way, other enterprises could have heard about the Marketing II project and they could have used this opportunity to start their own exporting activity. According to the responses of group A, the participants were highly satisfied with the project and they agree that it could stay the same in the future and that it is very likely that they will participate again. Group B did not participate in the programme mostly because of the lack of information about the projects intended for supporting the Czech export.

This should be addressed as a challenge and should be worked on in the future. Group A also states that the initial costs and the amount and complexity of administrative work required for joining the project were too high.

This study has been rather limited by very low participation of the enterprises (out of 676 (338 enterprises in each group), only 193 – 28,5 % responded) and by low level of technical assurance that meant that some of the respondents did not use the Google Docs application with the questionnaire and used another means of communication, such as telephone, instead. Another limit may be that firms that received grants are also influenced by the reply. Given that received the money their answers are positive, and in the case of negation cautious. The answers are subjective, so this limit can not be eliminated.

On the other hand this research opens very interesting topic of correlation between exporting activities of Czech SMEs and applying new company strategies, because almost half of the respondents from group A pointed out, that the attendance at the international fair or exhibition was very beneficial for observing new trends, modern technologies and news from all over the world. This opens up a new question of hidden targets and consequences of development of Czech SMEs' exports.

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The seven sins of unsustainability

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Abstract

Purpose of the article Provide a comparative analysis of the seven Asins of human kind and their principles disclaimed by the Dominican priest St. Thomas Aquinas in his manuscript *De Veritate*, *Thomae Aquinatis Opera Omnia* and some perceived management practices and behaviors, corporate policies and strategic decisions that very often led companies and organizations to an unsustainable future and to their own fall.

Methodology/methods Based on the assumptions of the indicated reflections about the human capital sins, the methodology includes a brief review about these principles and the sustainability of organizations and a comparison between the seven capital sins with some empirical case studies of management practices and behaviors and strategic decisions from different places and economies, in particular from well-known Russian and Portuguese organizations.

Scientific aim To establish a link among the principles of the seven capital sins and some managerial practices and behaviors and strategic resolutions that bring organizations to their unsustainability and fall.

Findings From this study, it appears from the showed cases that in each of them we see many managerial practices and behaviors similar with the principles of the seven capital sins. Furthermore, most of them reveal also a complete lack of ethics and moral principles in businesses in its practices, sometimes doing illegal acts and going against market rules and to the Law. Moreover, from the majority of the studied examples it appears that this type of bad managerial practices, management behaviors and strategic decisions led organizations to get serious problems in the future, sometimes with the end in its bankruptcy and fall.

Conclusions We found different faults and behaviors that reveal a lack of respect for the collective good, to citizens and economic agents and to the established rules of management practice. Also one of the main reason for companies' unsustainability is the desire of managers to perform what we can consider deadly sins on behalf of the governed companies. In this sense it's possible to establish an analogy between the concept of sins in the religious domain and morally reprehensible practices in economic activity. The main limitation of this study is the small number of cases used to identify the boundaries of the proposed concept and also the origin of them, mainly well-known cases from Portuguese and Russian economies. In future researches is intended to evaluate a bigger sample of management cases from other different countries and economies and also to get the expert opinion from managers, supervision authorities and other economical agents with the development of an inquiry regarding mismanagement practices and the so called "management deadly sins".

Keywords: Sustainability, Strategy, Management, Sins.

JEL Classification: D22, L21, M14

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Introduction

Existing literature provides plenty of references about good managerial practices in books, media news and in scientific researches and articles, some of them converted in to businesses case studies discussed in management schools and scientific conferences and transformed in references to make benchmarking.

However, the opposite don't get the same allusion in academia and specifically in scientific works. Even Cândido and Santos (2009) made an extensive review about the rates claimed by several researchers on strategy implementation failure and concluded that nobody really knows what is the true failure rate, due to the lack of solid empirical evidences and robust research methods, among other features. But recent developments on worldwide economy and the fall of organizations all over the world due to generally recognized bad managerial practices and strategic options have awakened citizens in general and some management researchers for the real characteristics of organizations sustainability.

Somehow, this phenomenon reveal's a great resemblance with ethical issues mentioned by Argandona (1997), cited in Anunciação et al. (2011, p.222), when the society and their common citizens mainly think and take care about ethical practices when they are in front of unethical facts.

Quite often the real efforts made to achieve corporate sustainability remain unclear, more resembling that they result from a set of favorable factors and lucky coincidences instead of well-defined sustainable strategies, resulting in managerial practices mainly focused on short-term gains and interests of restricted groups, institutions and persons.

These managerial actions which are usually implemented in contradiction to the official rules and laws and overlook good management practices, lead to the unsustainability and sometimes to an unexpected failure of organizations.

Recently, several cases associated to bad and illegal practices had occur in Portugal and abroad, namely related with private banks, financial groups, communications and energy enterprises and building contractors among others, being some of them in judgement or controlled by the courts and also under inquiry by official regulation authorities and special parliamentary commissions.

Evaluation of this type of managerial practices shows that they are often similar to the capital sins of human kind disclaimed by the Dominican priest St. Thomas Aquinas in his manuscript *De Veritate, Thomae Aquinatis Opera Omnia*.

This author assessed the human practices over the centuries and interpreted their actions in a group of seven human conditions classified as vices or capital sins according to the Catholicism, suitable to be judged and condemned.

In this paper we use this philosophical framework to systematize the main faults of contemporary corporate governance and draw a line between the seven deadly sins in everyday life and business management practices, as the main managerial mistakes are driven by these deadly sins adjusted to companies.

The general idea of sin is that it presents a bad practice, individual or corporate, that has been used and studied in several areas of management and society behavior by some authors, from Frank (2001) in her discussion about the common accepted practice of some sins in modern society to Bhagwati (2011) in his research about markets and morality issues, Kerzner (2012) with the study about how the seven deadly sins of project management failure and Rowe (2014) with the study about the consequences of ethical leadership, among other studies.

In this sense, the aim of this research is to establish a link between the principles of the seven capital sins and some managerial practices and strategic resolutions that induce organizations to their unsustainability and death, based in the analysis of empirical cases about managerial practices coming from different places and economies, in particular from Russia and Portugal.

This study is empirically based and assumes an informative and exploratory role on the present theme (Yin, 2003a, b). It follows a methodology that allows us to put together several sources of quantitative and qualitative information. It also allows us to perform transversal and longitudinal analyses, assuming simultaneously descriptive, explanatory and predicative characteristics (Pérez-Aguilar, 2004).

1 The Seven Deadly Sins

According to Rodrigues (2007) the human being seeks, with heartbreaking selfishness, thousand paths where run out the biggest and best energies of dignity and human nature. The seven deadly sins, also known as capital vices, are a millennial classification of human conditions prior to Christianity and later used by the Roman Catholicism in order to control, educate and discipline the basic instincts of their followers.

St. Thomas Aquinas¹ in his manuscript *De Veritate, Thomae Aquinatis Opera Omnia* analyzed the gravity of sins and ranked them in to seven distinct categories.

¹ Theologian and priest (1224-1274), canonized by Pope John XXII in 1323.

According to this and other theologians, each sin is the cause of the following ones, such as creating an habit or disposition to sin and providing material for another one, causing other for the same purpose or when to end a sin is committed another sin, in the same way that a fraud is committed with the objective of making money.

Thus, the capital vices are nothing more than those pointing to certain purposes especially desirable in themselves, guiding also this purposes for other vices, each one with their own characteristics.

Pride is strongly related with vanity and according to Saint Augustine² is connected to a distorted desire for greatness revealed in arrogant and presumptuous postures of human nature. Is a vice which seeks to overcome the proper measure of aspiration to superiority based on ostentation, ridiculous presumption and futility in which someone seeks to glorify himself in a false way, even though about something ephemeral, showing ostensibly their goods and alleged virtues. Connected to an excessive demand for excellence it's a vice that leads quite often to disobedience, haughtiness, hypocrisy, conflicts, obstinacy, discordance and a snobbishness about everything new.

Envy is a vice that looks to reach other persons badly, opposed to charity and to the desire of wanting good things for others and it's the source of other deadly sins leading sometimes to hatred. The principle of this sin is the pursuit of preventing others glory by lessening their goods or saying bad things about them, in an unnoticed way through the gossip or openly with slander. Is a mixed feeling of disgust with the joy and prosperity of others and gluttony for what others have.

Laziness is a sin related with negligence, inaction and indolence and it is associated with the sadness felt about something actually bad. The lazy tends to deviate from what saddens him and find what he like, instigating the indolent to abandon their duties and the sleepy to fulfill them in a sloppy mode. Sometimes being driven by despair, the lazy is tricked into losing oneself in the instability of his intentions and objectives.

The **anger**, closely related with the desire for revenge, creates accusations and leads to insults and shouting, indignation and blasphemy. When justified by a suffered damage considered as unfair it generates indignation and quite often revenge. When transformed in to offenses to third parties can assume a direct way through disparaging words spoken against others or a diffuse approach through a messy and cluttered speech to disguise the offenses made.

Greed is linked to a messy and excessive voracity and ambition for the possession of any goods and money. So greedy is the one who spends money in excess without any generous purpose as the one who excessively searches and retains money, sometimes from others. This excessive appetite for money leads, when someone seeks to trick another to draw profits, to attitudes of treason, perjury and lie and also to acts of fraud and violence in several forms.

In its most common principle, **Gluttony** is related with a huge appetite, keenness and lack of moderation in eating and drinking. According to Gregory the Great³ the vice of gluttony can be express in five distinct modes through five words: inappropriate in the anticipation of the time due to eat, luxurious in the requirement of expensive foods, exquisite in the complaint for food preparation refinements, moreover in eating and drinking more than necessary and devoted with the misplaced desire for food.

Despite its resemblance to a certain happiness and pleasure, gluttony leads sometimes to a dump over committed excesses, to an anesthesia of the human intelligence and also to an ignorant joy and debauched expansiveness produced by the cluttered and excessive consumption of foods and drinks. The completion of **lust** is the pleasure and it's related with exuberance, debauchery and the practice of libertine acts.

Sometimes the practice of this sin produce thoughtlessness by the lack of deliberation, blindness of mind through the overlap of desire in the face of apparent realities, precipitation in attitudes without taking into account any reasonable judgment, inconstancy by the lack of persistence in what was decided and despair about the future taking refuge on material and carnal issues.

We can resume the main characteristics and acts of each sin in the following table:

² *De Civitate Dei*, cited by Rodrigues (2007, p.28).

³ Quoted by Rodrigues (2007, p.80)

Table 1 Main characteristics and acts of sins

SIN	MAIN CHARACTERISTICS AND ACTS
PRIDE	Vanity, distorted desire for greatness, arrogant and presumptuous postures, ostentation, futility, excessive demand for excellence, obstinacy, snobbishness, desire of honor, recognition and distinction.
ENVY	Preventing others glory, reach others badly, lessening goods from others, saying bad things about others, gossip, defamation, gluttony for what others have.
LAZINESS	Negligence, inaction, indolence, sadness about something bad, abandon of duties, instability on personal intentions and objectives.
ANGER	Desire for revenge, accusations, insults, shouting, indignation, blasphemy, offenses to third parties, disparaging words, messy and cluttered speech.
GREED	Messy and excessive voracity, ambition to own goods and money, money spend in excess, retaining money from others, tricks to draw profits, treason, perjury, lies, acts of fraud, violence.
GLUTTONY	Huge appetite, lack of moderation in eating and drinking, expensive foods, food preparation refinements, anticipation and misplaced desire, excesses committed, intelligence anesthesia, ignorant joy.
LUST	Exuberance, debauchery, practice of libertine acts, lack of deliberation, blindness of mind, overlap of desire, precipitation in attitudes, no reasonable judgments, inconstancy, refuge on material and carnal issues.

Source: adapted from Rodrigues, 2007

2 The (un)sustainability of organizations

In recent past many companies all over the world revealed certain inability to deal with businesses in a global economic environment, failing in to disclose proper strategic decisions in a significant number of cases, using unbalanced management practices and generally failing in making use of their resources efficiently and effectively in a business environment full of volatile markets.

The financial and economic attitude implemented by some companies, focused mainly on short-term earnings and surpassing a humanist and social vision of businesses and society, many times reveals a lack of ethic and corporate responsibility in transactions development and in the relations with stakeholders, incompliance with legal obligations and sometimes the manipulation of financial and other corporate data in order to boost company's valuation.

According to several authors, firms and managers will have to abandon the traditional strategic view, focused essentially on profits and financial performance, and present an alternative vision that is based on the interaction with diverse stakeholders, to their interests and to the environmental impact of their activities according to a triple bottom line approach (Oliveira, 2007; Almeida, 2007; Donaire, 2006; Santoro, 2003; Elkington, 2001).

In fact, it has never been more urgent than today to realign business and investment practices to value long-term prosperity. The global economy can no longer afford "business as usual", focusing on short-term gains and ignoring long-term risks (CERES, 2010).

But quite often financial, social and environmental information's claimed by organizations reveal a lack of transparency about their performance, changing the same according to the impact of their activities on each context and often reflecting interests of individuals, groups and corporations (Santos, 2012).

According to Baumgartner and Ebner (2010), a good short-term performance of organizations evaluated mainly on the basis of accounting figures and other annual balance sheet information may "cover" difficulties to grant their medium and long term sustainability and the simple earning of profits is not necessarily a result of proper companies' management and shareholders' value and annual profits are not enough to measure corporations' efficiency (Svirina, 2009).

Although many companies aim to achieve sustainable management of businesses and publish their sustainability reports, the real efforts made by them to achieve corporate sustainability remain unclear, more resembling that the same result can be achieved as a consequence of irrelevant factors and lucky coincidences instead of well-defined sustainable strategies based upon valuation of internal and external aspects of the organizations (Santos, 2012).

With this thought, Svirina (2009) proposed a complex of managerial efficiency indicators to evaluate existing relation between managerial functions performance and company's profit, efficiency and shareholders' value in organizations.

Aiming to disclose the main features crucial for organizations to achieve their sustainability, Gisbert López et al. (2011, 2010) and Santos (2012) settled the "DPOBE Model for Organizational Sustainability", an empirical model established after focus group discussion whit several recognized managers supported in five pillars referred as the most

important ones in the frame of organizational sustainability and in which managers and organizations should develop their abilities.

For this authors, the core of organizational sustainability is supported mainly in the following: Direction, in order to evaluate the economic sense that must be given to organizations; Posture, related with management conducted by ethical values which will give organizations credibility and respect; Organization, which is measuring essential management activity for providing a multi-dimensional and multi-contextual answer to deal with businesses; Behavior, with quality as a rule for organizations, measuring all activities developed in the sphere of quality insuring and following strict standards of quality according to patterns of efficiency and effectiveness; Evaluation, with the implementation of procedures to analyze the organizational performance according to the defined strategic options and objectives.

However, despite a general recognition about the importance of this “way to see” and “way to be” in businesses by managers, academics and researches, the reality of business and management world and the facts we are continuously seeing all over different economies, markets and countries led us to the common impression that from words to actions there's a big difference, sometimes with dreadful effects.

3 Empirical facts about managerial practices and behaviors

In March 2010, an official court report about Lehman Brothers Holdings in US, bankrupted since September 2008, indicated that their executives regularly used disguising accounting tricks to make its balance sheets appear less unstable than they really were, using these practices as a type of repurchase agreement that temporarily removed securities from the company's balance sheet (Santos et al., 2013).

After American Hewlett-Packard bought the British company Autonomy Corporation in October 2011, they found that the price paid was much higher than the true value of it in an amount of 11 billion dollars, due to the hard-driving sales culture shaped by its founder and CEO Mike Lynch and the current use of aggressive accounting practices to make growing revenues from software licensing and boost company's valuation (Worthen et al., 2012).

In Portugal, the Portuguese Government had to nationalize in 2008 the private bank BPN as a result of its poor management which led to a debt of almost two billion euros and several irregularities and violations revealed in the institution. The serious and huge dimension of this problems and the possibility of contamination in the banking structure led the Portuguese Parliament to create a specific Commission to disclose possible bad and illegal managerial practices, despite other investigations still running in the Portuguese courts and the preventive jail of one of the bank administrators.

In April 2010, the Bank of Portugal decreed the end of the private bank BPP and in bankruptcy legal procedures several of its managers were accused for accounting distortion, tax crimes, money laundering and fraud.

One former administrator of BPP admitted in court that have done operations in obedience to “instructions” made by other members of the administration's board but with the awareness that was not a correct procedure, saying that “*If I knew I could do it in another way I would do it. What I did and how I did, didn't harm anyone and I didn't take any personal benefits from it. It may not have been in the correct way but I didn't mean to hide anything.*” (Sol, 2015).

Since August 2014, the Portuguese Espírito Santo Group, with strong involvement in banking and financial markets has in real estate and assurances among other businesses in Europe and abroad, owner of the older Bank Espírito Santo, saw several of its companies and holdings being declared insolvent in Europe and US due to bad management practices and enormous amount of uncovered debts.

Espírito Santo Financial Group, a holding company owned by Espírito Santo Group based in Luxembourg to control financial assets from the group and Espírito Santo Financière, another holding which has under its purview the financial assets of the group in France and Switzerland, declared insolvency after Luxembourg courts refused any legal protection against creditors (Correia, 2014).

The huge dimension of insolvencies within Espírito Santo Group even took Luxembourg judicial authorities to advertise on internet, in a specific web page, all the information concerning developments on insolvency procedures of five companies of the economic group (Cavaleiro, 2014).

Meanwhile and by superior decision of the Bank of Portugal, Bank Espírito Santo was separated from the rest of the business group in order to prevent a general failure, giving origin to the new bank Novobanco with only the considered good assets and leading to other institutions and to the courts the resolution of massive uncovered investments made in other group organizations, some of them disguised by its former bank to their customers as normal long-term bank deposits.

According to an audit report requested by the Bank of Portugal, leaders from Espírito Santo Financial Group made twenty-one disobediences against previous instructions issued by this banking supervision authority (Alves, 2015).

Due to the massive dimension of the money hole in the resources of this older family and originally financial business group, the need of intervention from Bank of Portugal in order to prevent a cardiac arrest to other banks and the investment of almost 900 million euros made by the major Portuguese communications cluster PT in assets of the Espírito Santo holding Rioforte, apparently to cover a disguised loan, all of this combined together with supposed irregularities and

violations in management and market practices in order to cover financial problems and boost group value in stock markets, led the Portuguese Parliament, as it happen with bank BPN, to create a specific Commission to investigate the origins of all this problems and disclose possible bad and illegal managerial practices, despite other investigations still running in the Portuguese Attorney General's Office.

According to Fernando Negrão, chairman of this special Parliamentary Commission of Inquiry, after more than four months of work and the conclusion of almost seventy auditions to several administrators and top executives from the group companies and other large corporations with connections with them as well as to actual and a former Portuguese Minister of Finance, other government officials and to the supervision and regulation authorities of Portuguese banking and financial activities, the most visible obstacle to Commission's work was all the significant and notorious hesitations, nonattendances and sometimes lacks of true revealed in several statements and clarifications provided during the hearings (Lira, Costa, 2015).

Statements used by several respondents such as *"I don't remember!"*, *"I don't know!"*, *"I suppose so!"*, *"Maybe it's like it!"* and *"Nobody informed me!"* where several of the answers made very often by some of the top executives heard during committee's sessions, most of them live broadcasted in television channels and intensely attended by journalists and political and economic analysts.

Only an administrator of Escom, another company from Espírito Santo Group, assumed before the Commission of Inquiry that deliberately used all the possible means to mask trading commissions received by Escom's role in the business of selling submarines to Portuguese navy from a German consortium, in order to make difficult the access to this information and wait for an opportunity with better tax conditions to pay legal tax obligations (Barroso, 2015). But it's not only in banking and financial corporations in Portugal that we can see organizations falling down due to, at least, questionable managerial practices and strategic options.

Top managers and stockholders from communications cluster PT decided and earned in personal salaries, bonuses and stock rewards almost 3.5 billion euros since 2010 despite a nonstop falling of organization's stock value up to 92% in the first half of 2014 (Cardoso, 2015), largely as a result of the fusion made with the Brazilian communications group Oi and also due to the large amount of money invested in Rioforte, one of the Espírito Santo Group divisions declared insolvent by the Luxembourg courts.

Several medium and large contractors are in special recovery processes controlled by the courts in order to prevent their insolvency and fall, some of them with attested unappropriated decisions taken by its management leaders in recent past, being some of them in investigation by judicial authorities with the suspicious of influence practices and favoritism in public contests.

An unpredicted legal recovery protection process is being taken also by YDreams, a Portuguese technological company several times recognized in Portugal and abroad by the quality of its management and great organization's value with several contracts with major international companies.

Even with the absolute confidence of its CEO and founder António Câmara that they will recover from actual condition, the reality is that the company founded in 2000 by this university teacher and other partners have claimed debts from about one hundred and eighty creditors in a total amount of almost 18 million euros, in a large part of it claimed by some banks.

Despite being a company that attracted powerful customers such as Coca-Cola and Adidas, the open of several offices in Spain (Barcelona) and Brazil (Rio de Janeiro and São Paulo) and its split into several companies such as Ynvisible, listed on Frankfurt Stock Exchange, since 2011 there were rumors about delays in the payment of salaries to their employees (Ralha, 2015).

Another example of a business failure due to questionable managerial practices is Aquapura Hotels Villas & SPA, a Portuguese company founded in 2002 by Diogo Vaz Guedes, former CEO of Somague, a great contractor group created by his grandfather in the mid-twentieth century and merged with the Spanish group Sacyr at the beginning of the new Millennium.

Almost ten years ago, this manager and entrepreneur stated publicly in an interview to a magazine his ambitions to invest in hospitality and tourism sector: *"I want to build 10 to 12 hotels in 10 to 12 years!"* (Prado, 2015). But things didn't occur as intended to. With the ambitious goal to invest more than 200 million euros until 2010, the first venture was an investment of 25 million euros in a luxury hotel opened in 2007 and located in the Douro, Portuguese region classified as world heritage and considered one of the favorite destinations for tourism.

Meanwhile, the company had plans for a hotel in Lisbon and other in the South of Portugal but the first never saw the daylight and the second one, despite the architecture projects done, was never built.

In their achievement to reach its expansion to Brazil, they invested 30 million euros in the first six-star hotel in Brazil. But in the predicted year for its inauguration the building was legally stopped by the Brazilian Environmental Institute and remains abandoned ever since.

Even so, the company announced another investment in Brazil of about 122 million euros in a project with hotels, residential houses, golf courses and a theme park to be open in 2014. However, the company is currently in a special process of recovery after judgement in courts about its insolvency and the creditor list points to company debts of about 46 million euros.

Mário Ferreira, a succeeded businessman of cruises along the Douro River, stated about the specificity of this case: *“Hotel units in Douro have quality, are beautiful and well located. But they have no dimension. And without a common efficient and effective strategy to promote, with financial and logistic capacity and know-how to promote themselves internationally, recognitions and awards don’t have any interest to business success.”* (Nunes, 2015).

Also in public organizations and services it’s possible to witness bad managerial practices or, at least, decisions taken with unethical principles and in favor of personal and group’s interests against the public interest.

Some superior management careers in municipalities and central public departments and organizations are being given to citizens according to their own political ideologies and family connections instead of being taken by professionals with proved skills and managerial experience. Following this sense Pereira (2014), former deputy and lecturer, referred that *“the level of requirement to work in public services it’s already so low, regarding the ones there now.”*

Paulo Morais, university lecturer and Vice-President of the Association for Transparency and Integrity, former member of Oporto city government, states that promiscuity between politics and business is the main catalyst of corruption in Portugal, without any distinction between politics and business since the political activity has been captured and it’s in service to some economic groups (Baptista, 2014). According to this teacher and researcher, Portuguese justice is ineffective with corruption and the achieved results are disappointing since there is neither convicted or arrested persons nor, as in other countries, recovery of any assets from corruption crimes. He explains that *“the financial sector, through the influence that it has in the State, manages all kinds of supports, transfers many risks for the State and still get huge returns at the expense of Portuguese sovereign debt. In turn, we note that urbanism is a sector where it is possible to turn agricultural land into building plots, generating capital earnings of 600 to 700% similar to the profitability of drug trafficking activity. In public-private partnerships are guaranteed to private investor’s huge profitability without any risk for them.”*

Some of the measures that must be taken to increase the fight against this type of crimes are, according to him, *“taking away fortunes in corruption cases, suspend State payments in irregular and illegal contracts and separate completely business from politics through a very restrictive law of incompatibilities.”* (Baptista, 2014).

The supposed and commonly noticed corruption in turn of government procurement and public contests are, several of them, related with municipal governments and mayors due to favoritism given to some providers in exchange of favors and illegal payments to public decision-makers.

Very often this type of procedures are revealed by the external signs of fortune that some public representatives and workers and even politicians show without any compatibility with their known goods and incomes which can identify possible cases of corruption in it’s different forms.

This type of evidences become quite common and gave origin to a number of legal investigations. Some years ago a police branch made an investigation to a former Mayor of a Portuguese north municipality that supposedly received an huge amount of money from an economic group, with the involvement of a third part between them, in order to allow the construction of two medium-sized commercial surfaces in a forbidden area of the national ecological reserve with an alleged violation to the metropolitan master plan (Público, 2003).

Even now a former Portuguese prime minister and others accused are under investigation and some of them are in preventive jail with the suspicious of money laundering, tax evasion, corruption and illegal intervention in businesses promoted by governmental departments in order to get about 23 million euros in illegal profits, all of this with supposed connections to private companies, contractors and public-private partnerships also under investigation.

Looking to Russia, the sanitation in 2011 of the Bank of Moscow took place when it was revealed that the portfolio of the bank did not allow it to have financial stability as a result of poor management practices and aggressive accounting disguise policies. Russian government had to invest 10 billion euros to provide its liquidity before the cleanness of bank VTB could start its antirecessionary procedures.

These was just one example in a row of about thirty others (in all cases Russian central bank was providing money to provide proper crisis management of these banks), all due to unsustainable portfolios and high deposit rates that banks could not afford but were implemented by bank managers to attract customers (Zubova, 2014).

Skolkovo business school was a promising educational project build on principles of practice-oriented management education and attracted the attention of former Russian President, Dmitry Medvedev, who decided to ensure development of Russian Silicon Valley on the basis of this institution. During five years the project had not achieved any of the set goals (Reuter, Golunov, 2015).

Even a worse situation happened to proposed Smart-city, a satellite city of Kazan, which was supposed to become a place of life, work and innovative entrepreneurship. But the project was closed in February 2015 after five years of implementation.

In pursuit to become the biggest Russian retailer of children goods, Banana Mama retail chain was implementing a very aggressive strategy that involved covering of all Russian major cities. To gain big market share the company was postponing payments to suppliers and rental payments, which resulted in bankruptcy after suppliers' refuse to continue shipment.

The competitive strategy of KamAZ plant which is a major supplier of trucks in Russian Federation, was to achieve preferences from the Russian government which would allow the company to acquire utilization fee from the government for replacement of old trucks (more than 20 years old) by the new KamAZ ones.

To ensure this KamAZ general manager's wife became a member of the Parliament to do the lobbying. The strategy failed when in 2014 Russian government refused to provide suggested privileges to the plant, and resulted in losses which were unexpected.

Rosneft company had risen on the basis of former Yukos main asset, Yuganskneftegas (Chaika, 2004), and exploited it since 2004 when it was acquired. By using this asset Rosneft acquired technology, equipment, human, information and organizational capital which allowed it to be profitable for a decade. But the drop of oil prices in 2008 and later in 2014 revealed that the company had not developed any of its own core competences to ensure competitiveness.

Daughter companies of Gazprom, one of the major Russian companies, in the beginning of 2015 was buying 39 iPhones with Swarovski crystals for the company together with pens with gold and platinum platter. At the same time North Caucasian Energy company was spending money on Versace handkerchiefs and Montblanc pens for "celebration of victory in World War II" (Volkova, 2015). At the same time both companies are claiming losses and as they are natural monopolies, are constantly applying for government approval of tariffs' increase.

In October 2014 Moscow Arbitrary Court proved the right of one of the main Russian TV channels (TV channel "Pervyi") to use the original concept of Endemol program concept (a UK entertainment channel) without paying for property rights (Boletskaya, Bryzgalova, 2014).

The suit of the owner of TV concept of the program in question (*Your Face Sounds Familiar* in the original program version) was declined as the court "*had not found evidence that any of the protected elements were copied*", though the defendant, the Pervyi channel, did not even disagree that the programs are very similar.

Hence the Arbitrary court in fact allowed the use of other's intellectual property in case the defender claims it had changed something and created a different and better product, thus providing Russian companies with a competitive advantage.

4 The Management Deadly Sins

The existence of such cases, when management practices seem to stimulate decrease in long-term efficiency of the companies by achieving a short term result, in authors' opinion, require provision of a concept that can provide a structure to describe mismanagement practices.

The achievement of profits without sense, rules or limits and sometimes by implementing illegal practices, lies, distortion of facts and figures and creation of false information about trades and businesses are some of the sins of managerial practices and behaviors seen above.

A distorted desire of ambition, greatness and recognition by managers and entrepreneurs among society and business partners can be considered a sin with impact in organizations led by this type of managers, with the whole business structure created and developed for these propose and conducted in their own image and wishes.

If one considers reasonable the desire and ambition of any entrepreneur or manager to grow and ensure high growth rates of its businesses, the lack of experience in some chosen activities allows us to consider unacceptable to reveal an excessive ambition to build an empire when nothing exists apart from a deep mixture of misplaced desire for greatness and a would-be recognition and distinction about something not yet implemented.

Even the strategic option for markets and businesses with strong growth and high returns without owning any experience and real knowledge about them may reveal an excessive voracity to get high profits in a relatively short period of time without taking in account the investments needed to be made.

The same idea can be considered about the decision on exclusive investments as a way to mark an international expansion, mainly for management leaders to express a certain exuberance and profound need to exceed expectations from other competitors and among the ones next to them, by creating a manifestation of exclusivity revealed afterwards by the facts as an option lack of a solid analysis and strategic coherence for who is taking its first steps in strongly competitive activities.

Following previous understanding, the option for markets and strategic movements decided upon what others do without a proper examination about their own and the core competences of its organizations are, from time to time, a consequence of envy about others success, being sometimes this attitude a revenge on them and a way to claim the same capacities to achieve the same goals.

Negligence and inaction of companies in the turbulent environment can be also considered a management sin if manager's don't take into account any changes in industries and competitors and other conditions in the engaging environment, continuing to develop "business as usual" without taking in account the need of reworking its structure and management practices according to changes on economies.

The lack of ethical principles in management actions when taking as a priority in managerial decisions the specific interests of small groups, persons and corporations against the common good of all different stakeholders, sometimes using illegal practices, is also one of the common management sins that led to the collapse of plenty of companies, businesses and other private and public organizations. Considering all the previous analysis and other facts released before in this research, the authors propose the following establishment of the seven sins in management practices and behaviors.

Table 2 Sins of management practices and behaviors

SIN	MANAGEMENT PRACTICES AND BEHAVIOURS
PRIDE	▪ Building a "show room" instead of a company ▪ Manipulation of management reports to ensure good external perception of organizations ▪ Revealing widely signs of organizations richness ▪ Arrogant positions and behaviors
ENVY	▪ Simple copy of other company's strategy ▪ Show that its company is doing the same things better than a competitor instead of developing its own core competences ▪ Practices of favoritism and influence within decision-makers ▪ Search for appointment to relevant positions ▪ Lack of transparency in actions and behaviors
LAZINESS	▪ Involvement in minimal economic activity ▪ Gain of privileges to ensure profits instead of competing in the markets ▪ Negligence and professional malpractice ▪ Irregularities in accounting ▪ Power abuse to influence businesses ▪ Dishonor of others
ANGER	▪ Aim to get rid of competitors at any price ▪ Ensure about competitors problems instead of building its own competitive advantage ▪ Revenge on third parties ▪ Rebellion against official institutions ▪ Defamation and insults over third parties
GREED	▪ Involvement in informal and manipulative activities to earn extra profits ▪ Ambition and power struggle ▪ Active corruption ▪ Handling of influences ▪ Money laundering
GLUTTONY	▪ Overwhelming pursuit for profits ▪ Profits gained by ilegal activities ▪ Illegal practices to increase heritage ▪ Disguise of earnings ▪ Cover-up of information ▪ Privileged use of information ▪ Illegal enrichment
LUST	▪ Spent of company's money in products and services unnecessary for company development ▪ Spent of company's money in luxury products to managers and others ▪ Forgery of documents and information systems ▪ Economic and policy promiscuity

Source: Own work, 2015

Conclusion

The present study aimed to establish an analogy between the concept of capital sins and some common failures and errors committed in the development of economic activities.

In this paper we suggest that one of the main reason for companies' unsustainability is the desire of managers to perform what we can consider deadly sins on behalf of the governed companies and, as we can derive from the above mentioned cases, the framework of seven deadly sins becomes a conceptual model for evaluation of mismanagement practices, seeking to establish an analogy between the concept of sins in the religious domain and morally reprehensible practices in economic activity.

In this sense, we directed our study to the research and analysis of several real business and management cases, most of them profoundly documented and largely released, where we could find different faults and behaviors that reveal a lack of respect for the collective good, to citizens and economic agents and to the established rules of management practice, especially with well-known cases from Portuguese and Russian economies.

The main limitation of this study is the small number of cases used to identify the boundaries of the proposed concept, made from the sensitivity of the researchers with limitations on time and information sources as well as the limitation of the study to known cases of Portuguese and Russian economies.

In spite of this limitations, we can conclude with the observation of the cases previously exposed that actual "sins" of non-sustainability are mostly the same in Russia, Portugal and other countries despite cultural and economic differences.

Hence the future research is intended to evaluate a bigger sample of management cases in order to gain additional evidence on the concept and also to get a quantitative evaluation of the data on mismanagement practices to cluster those, gaining a quantitative justification of the proposed concept.

Other future possibility to deepen this research is with the development of an inquiry regarding mismanagement practices to be evaluated and answered by several economical agents, from managers to supervision authorities passing also by different stakeholders, in order to validate the research carried out and seek the existence of other postures suitable to characterize more specifically and comprehensively each of the deadly sins listed.

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Analysis of university graduates' desired competence structure: The employers' perspective

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Abstract

Purpose of the article The paper investigates the employers' evaluation of university graduates desired competences as an evolution of past, present and future preferences proposed by the enterprises' chief officers.

Methodology/methods The findings of the paper are based on evaluation of questionnaire distributed to companies from the real sector of the economy to estimate most important competences desired by employers from incoming university graduates. The paper evaluates employers' perspective in terms of desired competences structure in the past, present and future. SPSS was used to define significant competences on all three points of time line, and Cronbach's alpha was estimated as 0,803, 0,931 and 0,935 for each period.

Scientific aim The scientific aim of the paper was to define actual requirements that enterprises state to university graduates, evaluate their significance and structure, and to reveal evolution of the competences over time.

Findings The main findings of the paper include the following: (1) preferred competence structure of university graduates evolves over time, and the list clear construction is given by the employers for the future; (2) the most important competences include systemic thinking and professional skills (were considered important by the employers in the past, present and future), while basic professional competence and information evaluation were estimated as significant in the past but are becoming moderating factors in future; (3) communication skills are considered significant by employers in the past and present, but become a factor moderating systemic thinking – professional skills relationship in the future.

Conclusions The main limitation of the study is the sample that included only Russian enterprises. The study contributes to the theory by evaluation of preferred competence structure of enterprises' newcomers along the timeline; and contributes to practice by outlining the most important competences that are to be developed within educational process.

Keywords: employers' preference; competence structure; employees' competences, graduates, quantitative analysis

JEL Classification: M12, I21

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Introduction

The problem of building university graduates competence profile appropriate for future career in industry, as well as the challenge of ensuring updated for real sector needs education approach had become an important issue of university development in past decades. To cope up with changing world, the universities intend to create curricula which address future needs of the industry by involving company representatives in their activities; but still the industry is in general dissatisfied with the level of competence of university graduates.

Employers had developed a number of tools to evaluate employees' competencies throughout their career: job and personal competences methods, performance evaluation, key productivity indicators, 360 appraisal, and a few others (Moore, 2014); but the majority is experiencing problems with updating university graduates knowledge and skills as they come to the companies. The latter became a significant problem in former USSR states due to underdeveloped or lost ties between industry and higher education, which lead to both decreased education quality and lowering of competence level in industry.

In this paper we are aiming to define how firms evaluate required competence profile of their future employees – university graduates – on a time scale (by using retrospective, current and perspective evaluation). To achieve this goal we identify preferences of Russian industry managers in assessment of preferred competences of employees. On the basis of this survey we define priorities of university curricula development so they would address industry preferences on the basis of existing strong sides of educational model.

1 Literature overview

Existing literature provides an emphasis of competence-based learning and learning by doing approach, and indicates a number of factors important for efficient competence development. These may include focus on information evaluation and skill building (Lang, Dittich, 1982), implementation of social learning approach instead of solely focusing on cases and laboratory works (Argyris, 1980; Barnett, Wilsted, 1978; Dooley, Skinner, 1977), or importance of multidisciplinary approach and vast use of examples and learning-by-doing approach (Clarisse et al., 2009). These methods are intended to build a platform for competence development, and to ensure high level of understanding among students.

The other trend in literature focuses on obstacles that prevent efficient learning process, and outline such important factors of competence development, as intrinsic motivation (Arnold, 1985), cultural and cross-cultural triggers (Reichard et al., 2013), acceptance of learning styles (Kolb, Kolb, 2005), and disintegration of learning on different learning levels (Mentkowski, 2000). In summary, all of the studies outline the main problems of competence building at the universities, which include inappropriate choice of learning tools and absence of practice orientation.

Taking this into consideration, we have adapted the idea of practical-based approach priority in contemporary higher education, which is based on implementation of systemic framework for educational programmes development; which clearly states the boundaries of experiential learning (Kolb, Kolb, 2005), usage of contemporary and multifactor learning evaluation tools (Keeton et al., 2002), multipurpose assessment of undergraduate learning and performance evaluation tools (Summers, 2003), and a strict algorithm for building curricula for sustainable competence development (Parsons, Beauchamp, 2003).

At the same time, literature review had revealed underestimation of time-based studies which evaluate not only competence profiles and learning tools, but also dynamics of preferred competences in order to define priority ways of development for universities that aim to provide better education for graduates in a turbulent environment of knowledge-based economy.

2 Methodology

For the purposes of this paper, we developed a questionnaire that evaluated the main competences that an employee should have in the employers' opinion. Development of the questionnaire was based upon existing research in competence-based learning for the case of Russia (Vasilyeva, 2010; Gaynanov et al., 2012; Employers' satisfaction monitoring, 2014). The questionnaire included 9 questions (see Table 1 for details), and it was distributed between 89 managers of real economy sector companies. 43% of the companies were industrial enterprises. The results were evaluated with the use of factor analysis in SPSS Statistics 21.0 according to the guidelines provided by SPSS (2010), which helped to reveal the main competences valued by the employers in the field of renewable and alternative energy processing masters in a five-year interval.

These questionnaires were distributed via Kazan National Research Technical University and TISBI university of management network of industry strategic partners, which allowed to have a high response rate on the survey (out of 110 distributed questionnaires 89 were returned).

Answers to the questions were positioned on 5-point Likert scale on which the manager had to assess how important certain employees' skills and knowledge are (1 – absolutely unimportant, 5 – very important). The respondent had to evaluate the importance in the past (5 years ago), at present and in future (in 5 years). Response scales were developed according to Schwarz & Deutsch (1985) findings.

Table 1 The structure of questionnaire

Questions	Criteria	Type of question /number of suggested answers
Part 1: Employee assessment characteristics		
Question 1	Evaluation of employees' key professional skills on a timeline (5 years ago, currently, in 5 upcoming years)	Closed question/10 proposed answers
Question 2	Evaluation of employees' professional skills from the other branches of knowledge and performance on a timeline (5 years ago, currently, in 5 upcoming years)	Closed question/5 proposed answers
Question 3	Assessment of time period that has to pass after an employee was hired, before he or she would need additional professional training (for a person employed right after graduation today, 5 and 10 years ago)	Closed question/8 proposed answers
Question 4	Evaluation of employees' personal characteristics on a timeline (5 years ago, currently, in 5 upcoming years)	Closed question/5 proposed answers
Question 5	Evaluation of certain skills of the employee on the timeline (5 years ago, currently, in 5 upcoming years)	1 open question, 21 closed question/5 proposed answers per each question
Question 6	Evaluation of employees' competence profile in regard to person's origin	Closed question/5 proposed answers
Part 2: Respondent profile		
Question 7	Amount of employees a manager is responsible for	Closed question/7 proposed answers
Question 8	Respondents' age	Closed question/10 proposed answers
Question 9	Respondents' experience (years)	Closed question/10 proposed answers
Question 10	Organization's industry	Closed question/12 proposed answers

Source: Own findings

To evaluate the findings we used factor analysis in SPSS in accordance to the recommended approach towards factor analysis with turned matrix components. To define the key factors the method of main components was used, and varimax method of factor turning was implemented. The results were proved statistically significant for all three time periods by Cronbach alpha (which was estimated as 0,803, 0,931 and 0,935 for each of above described periods).

3 The main findings

To understand the importance of different factors on the timeline, factor analysis was performed in retrospective (for employees, who were hired 5 years ago), at present (for employees manager was hiring in the current year) and in perspective (for employees which managers was planning to hire in 5 years). We used this design to estimate not only preferred competence profile of university graduates from the industry point of view, but also to evaluate how their priorities were changing along the timeline.

3.1 Hypothesis setting

For the purposes of the study we have set the following set of hypotheses:

- 1) competence structure which is considered an optimal one from the industry point of view, is changing along the timeline;
- 2) multidisciplinary competences are one of the key factors that define the value of employee;
- 3) looking from the long-term perspective, the significance of certain skills decreases, while the significance of multidisciplinary and complex skills increases from the employers' point of view;
- 4) employers provide detailed evaluation of preferred competence profile for retrospective and current evaluation of employee competences, but are less sure about preferred perspective competences.

Evaluation of the hypothesis is provided below.

3.2 Results evaluation

The majority of respondents (68%) were in charge of more, than 50 employees in total, their average age was 43 years, and average management experience – 13 years.

Text The significant results for employees' competence evaluation in retrospective can be found in Table 2. For the purposes of the study we have developed the following groups of competences: F1 – “Systemic thinking”, F2 – “Basic professional skills”, F3 – “Advanced professional skills”, F4 – “Information analysis and evaluation” and F5 – “Communication skills and adaptiveness”.

Table 2 Factor analysis of employees' competences (5 years ago)

Employees' competences	F1	F2	F3	F4
Is able to define the reasons and consequences of the actions	0,951			
Is able to evaluate the problem from different perspectives	0,887			
Is able to identify and structure the problem	0,874			
Has the wide scope of knowledge		0,875		
Posesses deep professional knowledge		0,874		
Is able to provide arguments in favour of opinion/proposal		0,770		
Is able to use specific tools in professional activity			0,892	
Is able to implement necessary calculations and evaluations			0,745	
Has the ability to use special software and professional methods			0,842	
Is able to provide oral and written presentations				0,920
Is able to understand professional information in foreign languages				0,873

Source: Own findings

As it can be seen from Table 2, employers provide a detailed evaluation of what they considered necessary competences of university graduates 5 years ago. This profile includes various types of knowledge and skills, both professional and personal ones. The most important skills are the ones from the “Systemic thinking” group, followed by the ability to acquire and process professional information. At the same time employers had outlined, that they did not consider communicative and adaptive skills important in retrospective.

The same type of analysis was performed for the current situation, when we evaluated employers' perception of university graduates' competence profile in the current year, and were asking respondents to assess their requirements for employees who were hired in 2014. The results of this analysis can be found in Table 3.

As it can be derived from the Table 3, the profile of competences had changed in 5 years: employers became less interested in basic professional knowledge, but are focused on professional skills and teamwork; it was relatively interesting to understand that the knowledge of foreign language was considered less important than 5 years ago.

Table 3 Factor analysis of employees' competences (current year)

Employees' competences	F1	F3	F5
Is able to define the reasons and consequences of the actions	0,781		
Is able to evaluate the problem from different perspectives	0,706		
Is able to identify and structure the problem	0,850		
Is able to suggest different ways of solving the identified problem	0,866		
Is able to use specific tools in professional activity		0,895	
Is able to implement necessary calculations and evaluations		0,915	
Is able to adapt theoretical models to practice		0,918	
Is able to learn and implement new technologies		0,809	
Is able to use special software and professional methods		0,863	
Has good teamwork skills			0,917

Source: Own findings

Finally, the same analysis was implemented for perspective period. The results of employers' evaluation of employees' competences in 5 years is presented in Table 4. As in Tables 2 and 3 we have used the same groups of competences.

From the data in Table 5 it can be seen, that future profile of the university graduate is limited by two groups of competences: systemic thinking and advanced professional skills, while information evaluation and analysis, as well as communicative skills and adaptivity, are not considered important by the employers.

The most important skills include evaluation of reasons and consequences and deep professional knowledge; it is also important that employers outline significance of how ready an employee is to learn throughout his or her career (this factor was not considered a necessary part of employee competence profile in present and in the past). At the same time, perspective evaluation of employee preferences reveals absence of teamwork requirements which were considered important at the current stage.

Table 4 Factor analysis of employees' competences (in 5 year period)

Employees' competences	F1	F3
Is able to define the reasons and consequences of the actions	0,939	
Is able to evaluate the problem from different perspectives	0,879	
Is able to identify and structure the problem	0,799	
Has the wide scope of knowledge	0,763	
Is able to evaluate mid-term and long-term consequences of the decision	0,792	
Is able to use specific tools in professional activity		0,976
Is able to implement necessary calculations and evaluations		0,976
Is able to adapt theoretical models to practice		0,808
Is able to learn and implement new technologies		0,927
Is ready for life-long learning		0,791

Source: Own findings

The above Tables prove, that employers' desired competences profile of university graduates changes along the timeline, which imposes extra requirements on the higher educational institutions, as they have to consider retrospective, perspective and current requirements during the process of curricula development, choice of learning techniques and program implementation.

4 Discussion

The above described analysis had supported the first hypothesis, the priority competence profile of the employees (university graduates) is changing over the timeline; the only groups of competences that are unchangeable are systemic thinking and professional skills. This finding is fully in line with literature, and supports in terms of importance of professional knowledge (Arnold, 1985; Bellanca, 2010; Kolb, Kolb, 2005). The result that shows time evaluation of preferred competence profile complements existing literature by stressing the importance of future profile evaluation to develop curricula which would be suitable for employers in perspective.

Hypothesis 2 was partly supported, as competences that include evaluation of reasons and consequences of decisions, were considered important part of employee's competence profile on all three stages of evaluated timeline; still, employers did not consider multidisciplinary knowledge itself to be important. This finding contributes to the existing literature as it states the contradiction between the main stream of educational research (concluding multidisciplinary as a significant part of employee performance) and empirical evidence from Russian employers.

Hypothesis 3 was fully supported by the findings, as we have seen the desired competence profile of university graduates changing over time. These findings are in line with existing literature (Keeton et al., 2002).

Hypothesis 4 was fully supported by the study: as we move along the timeline, employers become less positive on preferred competences, and are able to provide less details on priority directions in education. This finding complements to practice by outlining that for Russian case it is the university which defines future competence profile, while industry partners can provide very limited suggestions for curriculum buildings. This result is contradictory to existing literature (see Keeton et al., 2002), which probably is a consequence of different approaches used by Western and Russian companies in employee evaluation.

Conclusion

The study has several outcomes for theory and practice: first of all, it had revealed certain contradictions between existing literature which evaluates university approaches to teaching in terms of collaboration with industry, and empirical evidence from Russian industry and financial companies as a result of different approaches in employee development strategy which are used by Western and Russian companies. Lack of employers' understanding of future requirements to employees' competence profile was proposed by Krymov (2008), who blamed poor HR management practices, and Avshalumova (2012), who outlines low level of education as a main reason of employer dissatisfaction. Our findings confirm the problem on both sides: employers are unsure of preferred competence profiles of future employees, and universities might take into account their current requirements instead of unclear perspective ones. Second, we have revealed the most important competences, which include systemic thinking and professional technical skills, which are to be considered in the process of curricula development.

The study has several limitations: first, the sample of employers included solely Russian enterprises that operate in mid-Russia outside the capital cities. Hence, as other studies show, the results acquired in capital cities might appear very different from the achieved ones. Second, the study had a relatively small sample of respondents, which did not allow us to consider factors with less than 0.7 significance, to be important ones. Third, the questionnaire used mainly closed questions and thus did not allow respondents to insert their own suggestions on significant competences in the majority of cases.

All of these limitations call for future research which should consider a bigger sample of employers, including the ones from capital cities, to confirm the findings of this survey.

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Specifics of financial performance of subsidiaries of multinational corporations in the Czech Republic

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Abstract

Purpose of the article This paper focuses on the specifics of the evaluation of the MNC's subsidiaries. It deals mainly with issues of financial performance in relation to the organizational strategy according to the theory made by Bartlett and Ghoshal.

Methodology/methods The article presents a comprehensive method of assessing MNC's organizational strategies by established theory. It uses A total of 335 subsidiaries of multinational companies in the Czech Republic are evaluated from the point of view of organizational strategies that are taken into relationship with financial performance measured according to the methodology of the Research Centre for the Competitiveness of the Czech Economy (CVKS ESF MU). The relationship between mentioned characteristics was tested with statistical chi-squared test.

Scientific aim Following research question has been set: How does the organizational strategy of MNC implemented in a subsidiary affect the financial performance of the subsidiary? And the related hypothesis: Centralizing management of the subsidiary leads to a decrease in its financial performance.

Findings A statistically significant relationship was revealed between the application of organizational strategy in the subsidiary and its financial performance. Conversely, organizational strategy of the group proved to be for the financial performance of the Czech subsidiary irrelevant.

Conclusions The evaluation showed that for MNCs applying in Czech branches centralization strategy (but not those who choose such a strategy globally) the financial performance of the centralized subsidiaries is not important. These subsidiaries should have other objectives than high profit, e.g. strategic objectives in some categories of the costs, effectiveness or the volume and quality of production. Nevertheless optimal balance of centralization and decentralization in the form of a transition strategy GT encourages subsidiary to higher financial performance.

Keywords: MNC, organizational strategy, financial performance, relationship between headquarter and subsidiary, empirical research

JEL Classification: M16, F23

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Introduction

For the functioning of the global economy, the role of multinational corporations (MNC) is crucial. They are very important especially for small open economies such as the Czech Republic. Through foreign direct investments in the form of subsidiaries MNCs are major employers, business partners for local companies, taxpayers and sources of innovations. For the subsidiaries of MNCs, their management and good relationship with the parent company it is very important to set the criteria on the basis of which the branch is appraised. The most often parent companies set financial goals, but their fulfilment in certain types of branches is irrelevant or even counterproductive. The dependence of the financial performance on the management methods of branches represented by organizational strategies according to Bartlett and Ghoshal model (Šafrová Drášilová, 2014, p. 60-66) is the subject of this article.

Following research question has been set: How does the organizational strategy of MNC implemented in a subsidiary affect the financial performance of the subsidiary? and the related hypothesis: Centralizing management of the subsidiary leads to a decrease in its financial performance.

Financial performance will be assessed according to the methodology of Research Centre for the Competitiveness of the Czech Economy (CVKS ESF MU) (Blažek et al., 2011). The research was divided into two phases. The first deals with assigning organizational strategies to a specific company according to already developed and proven methodology (Šafrová Drášilová, 2012) and the second examines the relationship between organizational strategy and financial performance.

1 Theoretical background of research

The theoretical background of the research consists of the terminology, which is not unified across the literature, and the explanation of the model of organizational strategies.

1.1 Terminology

Many different denominations of companies which carry out their activities abroad appear in the theoretical literature. The most commonly used names are Transnational Corporation (TNC) and Multinational Corporation (MNC). Some sources also use designation International Corporation. In most cases, those concepts are used as synonymous. Nevertheless, some authors distinguish between different denominations. Zadražilová (2007, p. 22) sees the multinational companies as a precursor of transnational companies that operate globally or worldwide. Cihelková (2009, p. 42) is in favour of marketing concept. It states that while multinational companies maintain local culture in the subsidiary, transnational companies tends to its suppression (Rodrigues, 2009). In the following, the general approach to terminology is preferred (Ghertman, 1997, p. 7). Designation in source documents will be perceived as synonymous, and in the text the general and collective term "multinational companies" without further distinction will be used.

From the definitions used by international institutions (UNCTAD, 2013; OECD, 2000) and the definitions gave in the literature (Ghertman, 1997, p. 50; Dvořáček, 2006, pp. 159-160; Durčáková and Mandel, 2000, p. 268) the following characters were selected:

- At least two, but rather more enterprises connected by ownership or contractual relations.
- Synergistic effect resulting from the joint management in group of companies, joint strategy and sharing know-how, strategies and responsibilities.
- One or more corporations with significant influence on others.
- Business activities involved in at least one, but rather in more countries different from the country of origin.
- Considerable revenues from foreign operations.
- Private, public or mixed ownership (not necessary a purely private companies).

The parent company means a company that is not a subject to control by other companies grouped in the same MNC. This is referred to as the "Central" or "Headquarters of multinational corporation" (Blažek et al., 2011, p. 32). At the top of the hierarchy can also stand a formal holding company that controls ownership shares, or foundation owning the highest actively executing company (Goergen, Manjonb and Rennebooge, 2008). In such a case will be ignored formal character of the ownership. The hierarchically highest executing company with active management activities in relation to other companies in the group will be called parent company within the meaning of the definition.

For the purposes of this study all companies incorporated in a MNC will be called subsidiaries, noting that it is sufficiently simplistic term and methodology (for example of the Czech National Bank) is much more detailed (ČNB, 2007).

1.2 Organizational strategies of MNCs

Within the organizational structure of MNC can be implemented various organizational strategies, influencing mainly the nature of the relationships between headquarters and subsidiaries, but also between the subsidiaries themselves. Bartlett and Ghoshal (1989) defined four possible types of organizational strategies. They differ in the degree of tightness, respectively latitude of relationships between these entities. Organizational strategies are called International, Multidomestic, Global and Transnational while their order is given from the least connected to the most sophisticated relationships.

Way of organizing MNCs in the theory occurs in many forms and concepts. While, for example Hoskisson et al. (2013) define the strategies through behavioral characteristics of a subsidiary ("International Corporate-level strategy"), Bartlett and Ghoshal (1989) and subsequently Harzing (2000) and Ando (2005) tend rather to mentioned types of organizational strategies describing a MNC as a whole and its approach to managing foreign subsidiaries.

To assess belonging of MNC to the type of organizational strategy are crucial following characteristics:

- The degree of centralization and decentralization of decision-making within the entire group, especially in the area of product portfolio, marketing, financial management and others.
- Product and capital flows within MNC.
- Tightness and character of relationships between subsidiaries.
- Presence or absence of companies that specialize in certain support activities.
- The direction and intensity of the knowledge transfer.
- General emphasis on the efficiency of the entire network of subsidiaries.
- The use of expatriates.
- Transfer of the dominant culture from headquarters to subsidiaries.

According to the model in the International MNCs type the relations are based on financial flows. Company that choose this organizational strategy is usually not perceived as a multinational company, but rather as local companies with foreign operations. Strategy Multidomestic represents MNCs, which govern their foreign activities and between the company headquarters and subsidiaries maintain closer relationships. Products are highly adapted to the local market and subsidiaries pursue their own strategies whose performance is evaluated especially through their financial plans. In the organizational strategy Global the headquarters is the alpha and omega of all activities of the MNC. It manages the operation of subsidiaries, and in particular decide on their goals, not only strategic but also operational. Management of subsidiary is therefore highly centralized. MNCs of this type seem to be a large, strongly hierarchically organized enterprise with a high degree of centralization. Transnational MNC has a character of the complex network in which information, product and capital flow not only between the headquarters and subsidiaries, but also between subsidiaries themselves (Bartlett and Ghoshal, 1989; Harzing, 2000).

Of the four types of organizational strategies, type International will not be taken into account because it represents the initial stages of development of multinational companies. Attention will therefore be according to Harzing (2000) devoted to strategies that describe already fully developed MNCs, ie. Multidomestic, Global and Transnational.

Whereas the descriptions of strategies are very comprehensive and a number of factors enter into the definition, in reality it is not possible to classify the MNC to "clean" type of organizational strategy. Usually these are the predominant characteristics in various combinations. Nevertheless, some authors have attempted to such assignment, such as Siew and Chin (1993). They concluded that the strategy type Transnational is applied at least and the most surveyed companies applied strategies Multidomestic and Global. Later researches brought different results and already reflected the growing impact of information technologies (Boudreau et al., 1998). They showed that dynamically evolving information technologies and their wide application in the management led between 2000 and 2010 to changing the organizational strategies of MNCs towards interconnected networks, in which the efficiency increases through sharing of resources, knowledge and innovation. There is thus a noticeable inclination to Transnational strategy.

2 Character of research

Although foreign research often focus on the influence of the headquarters on the local subsidiary in a particular region, Central and Eastern Europe are being neglected (exception are Rugraff and Hansen (2011), but their study is rather general). Harzing, Sorge and Paauw (2002) in comparative studies compared the approaches to the autonomy of the subsidiaries of the German and British companies, but the Czech Republic remains with other post-communist countries slightly overshadowed. Contrary to the projected image of MNCs as giants, which deprive the local subsidiary of the national culture of the host country and unify them excessively, some authors on case studies conclude that subsidiaries can be seen rather as the local companies that carry out international activities (e.g. Harzing and Noorderhaven, 2008). Top management of the subsidiary can even harmonize the local culture with the culture of MNC (Dörrenbächer and Geppert, 2009).

Generally, there are tendencies to balance centralization and decentralization with regard to the type of organization, its field of action and type of business in theoretical literature (e.g. Garbe and Richter, 2009). However, the question remains whether it is possible to generalize these findings to MNCs, which entered the Czech market and whether the method of subsidiary management affects its financial performance.

The inductive approach was applied, but it is not possible to fully generalize the output due to the nature of the sample, because it is not a random choice. However, a satisfactory range of generalization is allowed, because the sample does not deviate significantly from the quota of assessed parameters of the population and is statistically sufficiently wide (Hendl, 2009).

2.1 The population and the sample

The similar surveys are very often based on the case studies, which are typical of qualitative nature of the data obtained and the limited number of surveyed companies (e.g. Miozzo and Mo, 2012). The presented research is a quantitative analysis of data obtained from a large number of respondents from subsidiaries in one country. Therefore this research differs from the commonly presented research on the same or similar topic.

With regard to the author's involvement in research conducted at the Research Centre for the Competitiveness of the Czech Economy (CVKS ESF MU) are utilized data from this empirical research. The research sample consists of all companies that:

- Operate on the territory of the Czech Republic.
- Have more than 50 employees.
- Their annual turnover is over 30 million CZK (approx. 1 million EUR).
- The legal form of a limited liability company or joint stock company.
- Wholly or partially owned by foreign owner.

The population is limited to companies complying with these conditions, which are not in liquidation, bankruptcy or judicial execution. There was in 2011 a total of 2509 in the Czech Republic and all of them were addressed for the research.

The total amount of 403 companies took part in the questionnaire survey, of which 335 completed questionnaires could be used to evaluate research. The remaining 68 companies did not meet the requirements of size, legal form or did not classify themselves as a part of MNC. The sample thus represents 13.35% of the population.

Due to the nature of the data the sample was obtained by random sample quota selection, which is quite risky in terms of reliability, but it is a commonly used method in the social sciences (Hendl, 2009; Disman, 2000). Subsequently the representativeness of the sample was examined on the basis of the following indicators (Blažek et al., 2011):

- The legal form of the company.
- The size of the enterprise measured by the number of employees.
- Performance measured by the comparative coefficient of the financial performance.
- Industrial sectors according to CZ-NACE classification.

Evaluating of the representativeness of the sample was assessed through the percentage of surveyed characteristics (Blažek et al., 2011, p. 20-26).

2.2 Data collection

Two primary sources of data were used. The first is a database of financial statements CREDITINFO, which includes key financial and economic indicators drawn from the annual reports of companies. The advantage of this source is its complexity, but it sometimes contains incomplete data. Although the vast majority of companies in the population are subject to the statutory obligation to publish their annual reports, many of them do not reflect this obligation, or they fulfil it with a considerable delay, which is further extended by incorporating the changes to the database. Despite the above limitations, however, it is the most comprehensive available source of such information. The second source of data is the survey conducted under the auspices of the CVKS ESF MU.

3 Methods

The two main methods used are multidimensional data analysis and statistical testing of independence. Financial performance was assessed according to the methodology used in the previous survey (Blažek et al., 2011, p. 18-19).

3.1 Financial performance

For the analysis of the financial performance was applied approach based on the idea of Kaplan and Norton that „financial performance can be improved by two basic approaches - increasing revenues and productivity improvements.” (Kaplan, Norton, 2004, p. 36)

Those two basic financial strategies – the strategy of growth and the productivity improvement strategy – are mutually exclusive (Kaplan, Norton, 2004) and only excellent companies are able to implement them both simultaneously and thus achieve exceptionally high financial performance. (Blažek et al, 2011, p. 18)

According to Hult et al. (2008) the financial performance indicators based on sales and return on assets are most frequently are used for research purposes. Šiška and Lízalová (2011) identified two groups of at least correlating indicators – indicators of profitability and growth indicators. Specifically they identified as suitable indicators of return on assets and growth of assets.

For those indicators, holds that:

$$ROA = \frac{OP}{AF} * 100 \quad (1)$$

$$GA = \left(\frac{AF}{AB} - 1 \right) * 100 \quad (2)$$

where:

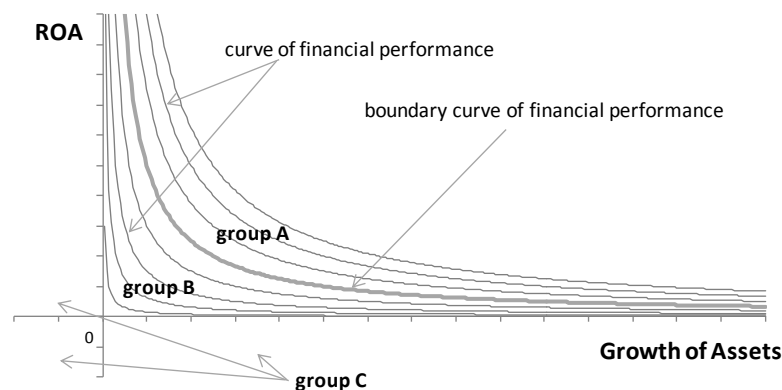
- OP operating profit
- AB assets at the beginning
- AF assets at the end
- ROA return on assets
- GA growth of assets

The values of ROA and growth of assets in one year may be influenced by different fluctuations. For determining financial performance five-year arithmetic averages of these indicators were therefore used.

The product of the values of both indicators of a company is designated as the coefficient of financial performance and expresses overall success of the financial strategy. If both indicators have positive sign, the company is situated in the following figure in the first quadrant. However, if the value of one or both indicators in the long term have negative sign, the company is located on the second, third or fourth quadrant, it means that the company is decrease and / or devalues its property and therefore cannot be evaluated as economically successful.

The company may achieve the same financial performance by selecting different strategies such. Joining points with the same value of the coefficient of financial performance, but different combinations of values of ROA and asset growth, we get curve of financial performance. A company with a higher coefficient of financial performance will be located on a higher curve.

All analyzed companies are divided into three groups. Group A includes companies with above-average financial performance; in groups B and C are companies with below-average financial performance. Border between companies with above-average and below-average performance makes the product of medians of five-year averages of ROA and growth of assets of all companies in adjusted basic set (with financial data available). In the following figure, these values are represented by the boundary curve of financial performance. The difference between the financial performance of group B and C lies in the fact that companies in the group B have both indicators with positive sign; companies in the group C have one or both indicators with negative sign.



Source: Blažek *et al.*, 2011, p. 20

Figure 1 Financial performance

3.2 Multidimensional data analysis

Data for assigning organizational strategies require an evaluation method that will be adapted to the processing and interpretation of multidimensional data. The three organizational strategies represent the three main dimensions – Multi-domestic, Global and Transnational Radial Coordinate Visualization (RadViz) in combination with the analysis using the polar axes (Rencher, 2002) proved to be the most suitable for this purpose method. Both of these methods are usually used in the context of data mining techniques in management (Berry, Linoff, 1997). Applied to three-dimensional data, they provide similar results.

For the purpose of this research a method that eliminates weaknesses of both approaches was created. It simultaneously preserves a high explanatory value for the final interpretation of the data. Logic of the axis with one beginning was taken over the analysis using the polar axis. On the contrary, vector technique using a point in the plane was taken over the method RadViz (Šafrová Drásilová, 2012).

3.3 Testing of independence

Regards for the nature of the analyzed data comes into consideration practically only tests dealing with (in)dependence of two nominal variables. To evaluate the dependence of the monitored quantities the chi-squared test and Cramer coefficient were therefore chosen.

4 Results and discussion

Presentation of the results is divided into three consecutive steps. The first phase was focused on the evaluating of organizational strategy of the entire MNC. Subsequently specific applications of organizational strategy in the subsidiary were assessed because the perception and implementation of organizational strategies at the branch and headquarters could differ (Enright, Subramanian, 2007). The last step was to examine the relationship between organizational strategies (in whole MNC and separately in subsidiary) and the financial performance of the subsidiary.

To determine the organizational strategy of MNC a total of 30 questions from the questionnaire was encoded. Evaluating of applications of organizational strategies in subsidiaries consisted of 21 questions focused on centralization, decentralization, processes, financial management and cultural aspects of the management in accordance with methodology of Harzing (2000) (see Blažek *et al.*, 2011, annex I).

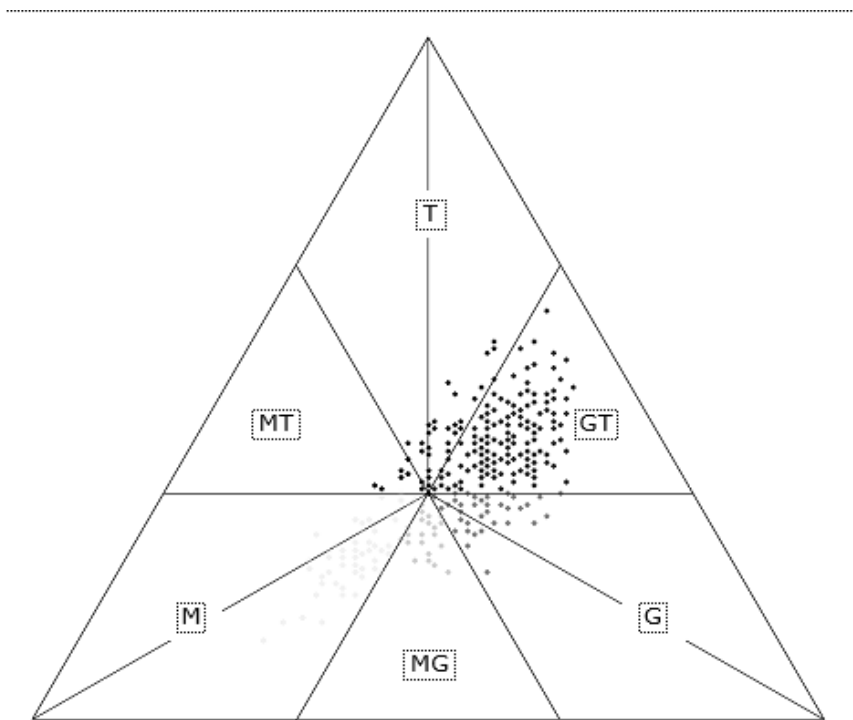
4.1 Organizational strategy of multinational company

Multidomestic strategy is represented by 16.42% of the companies. About one-sixth of multinational companies operating in the Czech market choose a decentralized approach. Although we could expect that the most MNCs will implement a strategy Global (Siew, Chin, 1993), the results did not confirm that. Global strategy in its pure form (ie. in the form of a strong parent company in which the decision-making and strategic functions are centralized), is represented only by 12.24% of the companies. The results also demonstrate that MNCs are progressively integrated into a complex and decentralized networks and are much more likely to use elements of organizational strategy Transnational (Boudreau *et al.*, 1998). Yet the percentage of companies that implement the strategy Transnational in its pure form is relatively low (9.25%).

Almost 50% of all enterprises are located in the zone GT, it means between Global and Transnational strategies. The probable cause is that companies with complex information systems have a wide range of ways to connect particular parts of the entire Group. It simplifies the sharing of knowledge and innovation, which is in compliance with the findings of previous studies (eg. Birkinshaw, Hood, 2001). Thanks to that MNCs partially show network character typical for Transnational strategy, but at the same time a wide range of functions remain centralized with the dominant role of headquarters.

Entirely consistent with the theory, there is the minimum of companies in the zone MT because the companies implementing the strategies Transnational or Multidomestic are totally different. Those organizational strategies are so much different that combining them is in principle difficult, if not unfeasible.

Distribution of companies in the graphical model is shown in the following figure:



Source: Author

Figure 2 Graphical illustration of companies in the model

Absolute and percentage distribution is included in the following table 1:

Table 1 Absolute and percentage values of organizational strategies

Organizational strategy	M	MG	G	GT	T	MT	unclassifiable
Number of companies	55	30	41	166	31	10	2
Percentage	16.42%	8.96%	12.24%	49.55%	9.25%	2.99%	0.60%

Source: Author

4.2 Applications of organizational strategy in the subsidiary

Organizational strategy was chosen again to assess the position of the local subsidiary in the MNC structure, but from the point of view of the subsidiary itself and not the group as a whole.

As the following table shows, the implementation of organizational strategies in the subsidiary differs from the strategy of the entire group, which is reflected in their percentage share. While in the group's strategies the strategy GT was dominant, in the Czech subsidiaries the distribution is more regular and the implementation rate of strategy GT is similar to the strategy Global. Conversely Transnational strategy applied in the subsidiaries is more common than in entire MNCs. Multidomestic strategy and transition strategy MG range in comparable rates. Absolute and percentage distribution is included in the following table:

Table 2 Absolute and percentage values of organizational strategies in subsidiaries

Organizational strategy	M	MG	G	GT	T	MT	unclassifiable
Number of companies	59	36	88	84	50	18	0
Percentage	17.61%	10.75%	26.27%	25.07%	14.93%	5.37%	0.00%

Source: Author

Because the categories "unclassifiable" and MT are not for the reasons stated above interpretable, they will be collectively called "unspecified". For these categories is not possible to derive relevant attributes, nor relate them to the examined problem.

4.3 The relationship between organizational strategy and financial performance

For evaluation was completely filled the required condition of good approximation. The results of the statistical test are thus very well interpretable. A statistically significant relationship was revealed between the application of organizational strategy in the subsidiary and its financial performance. Conversely, organizational strategy of the group proved to be for the financial performance of the Czech subsidiary irrelevant.

The following table summarizes the test statistics for dependence between organizational strategy of the MNC and the financial performance of the Czech subsidiary.

Table 3 Relationship between organizational strategy of the MNC and the financial performance of the subsidiary ($\alpha=0,05$)

	Chi-sq.	sv	p
Pearsons chi-sq.	9,2915	df=15	0,8618
M-V chi-sq.	9,8304	df=15	0,8303
Fi	0,1665		
Conting. coeff.	0,1643		
Cramér. V	0,0962		

Source: Author

From the results we cannot say that one of the organizational strategies of the entire MNC is optimal for the financial performance of the subsidiary. Although the concept of model entice to normative judgments, it is not possible to recommend an optimal organizational strategy for the financial performance of the subsidiaries. Both MNCs strictly centralized and decentralized networks may have branches with high as well as below-average financial performance.

The situation is different in case of the application of the organizational strategy in a particular subsidiary. If we focus on the specific centralization and decentralization managerial actions applied within the relationship between headquarters and the Czech subsidiary, the statistical dependency is confirmed even though p-value borders on the level of significance and the dependence is relatively weak.

Table 4 Relationship between the application of the organizational strategy and the financial performance of the subsidiary ($\alpha=0,05$)

	Chi-sq.	sv	p
Pearsons chi-sq.	25,248	df=15	0,0467
M-V chi-sq.	25,387	df=15	0,0450
Fi	0,2745		
Conting. coeff.	0,2647		
Cramér. V	0,1585		

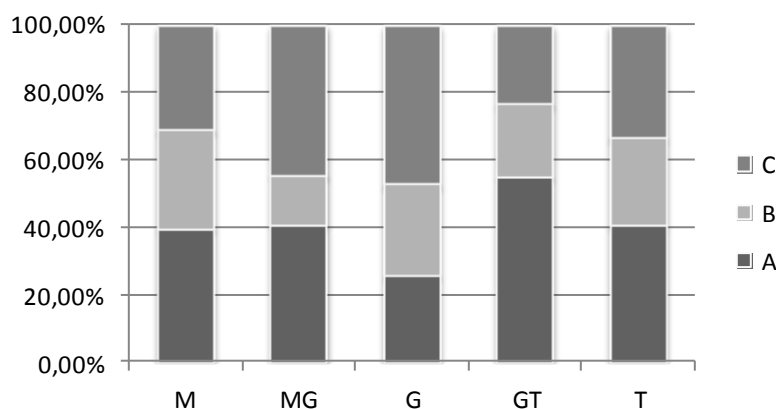
Source: Author

The following table shows absolute and percentage distribution of financial performance in the types of application of the organizational strategy in the subsidiaries:

Table 5 Absolute and percentage distribution of financial performance in the types of application of the organizational strategy in the subsidiaries

Organizational strategy	Financial performance						Total
	A		B		C		
	abs.	%	abs.	%	abs.	%	
M	19	39.58%	14	29.17%	15	31.25%	100.00%
MG	11	40.74%	4	14.81%	12	44.44%	100.00%
G	19	25.68%	20	27.03%	35	47.30%	100.00%
GT	33	55.00%	13	21.67%	14	23.33%	100.00%
T	17	40.48%	11	26.19%	14	33.33%	100.00%
Unspecified	3	21.43%	7	50.00%	4	28.57%	100.00%
Total	102	38.49%	69	26.04%	94	35.47%	100.00%

Source: Author



Source: Author

Figure 3 Percentage distribution of financial performance in the types of application of the organizational strategy in the subsidiaries

The dependence between financial performance and position of the subsidiary in the MNC is not easy to interpret on the basis of direct proportion and the results should be explored more in depth. If the Czech branch is highly centralized (which corresponds with Global strategy), proportion of companies with the best financial performance (A) is compared to other organizational strategies very small – only 25.68%. On the contrary, the group with the worst financial performance (C) is between these subsidiaries intensively represented. Profit and financial performance in this case apparently move to a higher hierarchical level of MNC and does not form in the Czech subsidiary. The combination of the application of Global strategy with financial objectives in assessing the performance of the subsidiary therefore often leads to disenchantment and demotivation of the local management, which is not able due to the strong centralization of decision-making affect the financial performance. For centralized management of subsidiaries are much more suitable non-financial performance criteria, eg. the number of units produced, production quality, speed of delivery, etc.

For relatively decentralized strategies such as Multidomestic and Transnational, the rates of each class of financial performance are very similar – group A accounts about 40%, group B between 25 and 30% and group C and between 31 and 34%. For migration strategy MG the centralizing elements lead to a significant decrease of the financial performance. Transition strategy GT that combines elements of network relationships with the centralization of decision-making in the parent company seems to be the most favorable to the financial performance of the Czech subsidiaries. There is a percentage of subsidiaries with the financial performance A more than 55% and C only 23.33%. We can therefore say that although the implementation of centralization elements of decision-making generally deteriorates financial performance

of Czech subsidiary, its suitable combination with decentralization, network elements and sharing of know-how typical for organizational strategy Transnational reinforces financial performance of the subsidiary.

5 Conclusion

The evaluation showed that for MNCs applying in Czech branches centralization strategy (but not those who choose such a strategy globally) the financial performance of the centralized subsidiaries is not important. These subsidiaries have other objectives than high profit, e.g. strategic objectives in some categories of the costs, effectiveness or the volume and quality of production. Fulfillment of such objectives should be the basis for evaluating the effectiveness and performance of the company and therefore the assessment of its management and staff. Profit-oriented financial goals of the particular branches are in the forefront, the emphasis is on the financial performance of the MNC as a whole. Mentioned subsidiaries will also be typical representatives of redistribution of the profit through transfer prices.

Subsidiaries managed in a decentralized way make profit and financial performance at the lowest hierarchical level in the organization. Management of the subsidiary has the freedom to choose the ways how to reach financial goals set by the parent company (or even by them) and may also freely use available resources. Evaluation of management and employees may therefore be based on standard financial indicators (revenues, earnings, profitability etc.). If the financial goals of the parent company are realistic, competence disputes between management of the subsidiaries and the parent company resulting from excessive centralization are eliminated. However, to maximize the financial performance of the subsidiary a strongly centralized decision-making to the headquarters can be useful.

Research question set out in the introduction of the paper has been answered, but formulated hypothesis was confirmed only partially. Increased centralization applied to relationship between a subsidiary and headquarters generally leads to lower financial performance of the subsidiary. Nevertheless optimal balance of centralization and decentralization in the form of a transition strategy GT encourages subsidiary to higher financial performance.

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New trends in management and their influence to the project management

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Abstract

Purpose of the article The paper is focused on new trends in the management and their impact on project management. Nowadays more and more event, action, operation and contracts are realised by using of project management. The role of project is very important and it is also influenced by new trends in management such as risk management, knowledge management a change management. The aim of the article is to determine how these trends affect project management and whether it is in terms of practical importance.

Methodology/methods The methodology in the elaboration of this article comes from the authors' primary research, which formed the main part of the overall research. On the basis of a properly compiled questionnaire and structured interviews were obtained data which are used for subsequent analysis. There are used methods for comparing the influence of individual factors on the final project.

Scientific aim Research objective was to identify how the new trends in management affect project management. Specific aspect of our research was a using of knowledge management, risk management and change management on the life cycle of the project. We found out the advantages and disadvantages of these methods and their use in practice.

Findings That research proved that the companies in the Czech Republic have interconnection between project management and risk management, change management and knowledge management. There is described the influence of various factors on the project and their impact on the outcome of the project and the timely completion of the project, including the taking into consideration the time and cost effectiveness. In today's changing society is not possible for the project without the use of these basic methods and approaches, has been successfully implemented.

Conclusions Finally, we are able based on the research confirm that project management is connected to the risk management, knowledge management and change management. The projects can't be implemented without using these. There are significant advantages for that, and it can improve the quality of the projects and also the like hood of success in the projects.

Keywords: project management, project, knowledge management, risk management, change management

JEL Classification: M15, M21

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Introduction

The following paper is focused on new trends in management that affect project management. The project is very characteristic and using of new trends should lead to the successful and timely completion of the project. These new trends can be classified as trends in change management and risk management, and of course also in knowledge management.

1 Theoretical background

1.1 Knowledge management

Very early on in the KM (knowledge management) movement, (Davenport, 1994) offered the still widely quoted definition:

"Knowledge management is the process of capturing, distributing, and effectively using knowledge."

This definition has the virtue of being simple, stark, and to the point. A few years later, the Gartner Group created another second definition of KM, which is perhaps the most frequently cited one (Duhon, 1998):

"Knowledge management is a discipline that promotes an integrated approach to identifying, capturing, evaluating, retrieving, and sharing all of an enterprise's information assets. These assets may include databases, documents, policies, procedures, and previously un-captured expertise and experience in individual workers."

Other publications dealing with knowledge management and the trends in knowledge management are: Martensson (2000), Massingham (2014), Gao, Li, and Clarke (2008) and Gao, Li, and Nakamori (2002).

1.2 Change management definition

Change management is a systematic approach to dealing with change, both from the perspective of an organization and on the individual level.

Any change takes place through small steps, and it is therefore necessary to manage these individual parts to make a change successful. This requires a set of individual roles throughout the change process. The entire change can be implemented according to a pre-selected model, which is support for the control unit. The success and suitability of change contributes well-made analysis prior to the implementation of change, of which show the need for change and its particular focus.

There are some publications dealing with change management, successful change management and the role of leadership in change management: Burnes (2000), Kanter, Stein, and Jick (1992), Mullins (2002), Patching (1999) and Rye (2001).

1.3 Risk management in relation to project management

Risk management not only in project management is a systematic process that aims to identify and manage risk, in order to act on its appearance (minimizing or eliminating, (if it is possible) and controlling), by implementing systems and procedures to identify, analyse, evaluate and address the risks inherent to any project (Conroy, Soltan, 1998; Raz, Michael, 2001). In general, project risk management consists of three phases (Buchan, 1994) - risk identification, risk assessment and risk response.

Risk management is a structured approach for the identification, assessment, and prioritization of risks followed by planning of resources to minimize, monitor, and control the probability and impact of undesirable events (Smith, Merritt, 2002)

Risk management is an essential part of every project; no project is free from risks. At any stage of a life cycle, a project is plagued with various risks due to the complex and dynamic nature. (Zhao, Chen, 2010)

Risk management must contribute (AFNOR, 2003; Courtot, 1998a; Courtot, 1998b):

- to define the different project objectives;
- improve project control;
- increase the chances of project success;
- improve communication between project participants;
- facilitate decision-making;
- prioritise actions.

Despite this fact, risk management is often left aside in project management practice, or is not given due attention. Therefore, risk management can help project managers to anticipate delays that cause projects not to be delivered on time (Grant, Cashman, Christensen, 2006). The risk response plays a proactive role in mitigating the negative impact of project risks (Miller, Lessard, 2001).

The project team should encounter risks throughout the whole life cycle of the project and in all of its phases.

Smith described principles and guidelines for effective risk management and emphasized the importance of active risk management for accelerating projects and improving their success rates. (Smith, 1999) Raz et al. performed an empirical study and reported that risk management practice is more applicable for higher-risk projects and appears to be related to project success (Raz, Shenhar, Dvir, 2002).

2 Data and methodology

Primary research was conducted using structured interviews with a questionnaire, where the answers were recorded. The questionnaire was divided into several parts, the first devoted to the size of the projects that are implemented and also number of successful projects, further questionnaire focuses on the overall project management and how it is managed in the institution. Other parts are dedicated to surveying utilized methods that are used in the field of risk management, knowledge management and change management.

Questionnaires were processed and evaluated in MS Excel. There was examined the influence of individual parts to the success of projects in a given institution.

There is part of questionnaire for example for risk management is in the Table 1.

Table 1 Part of questionnaire

Risk management	
1. Is it processed the strategic management in the institution? ☐ Yes ☐ No	
2. Do you have the specific strategic goal in the field of risk management? ☐ Yes ☐ No	
3. Do you regularly do strategic analysis? ☐ Yes ☐ No	
4. What method of risk analysis do you know? (it is possible to choose more variants)	
☒ RIPRAN ☐ HRA ☐ ETA (Event tree analysis) ☐ Root Cause Analysis	☐ FTA (Fault tree analysis) ☐ Scenario Analysis ☐ Markov analysis ☐ Bow tie analysis
5. What method of risk analysis do you usually use? (it is possible to choose more variants)	
☐ RIPRAN ☐ HRA ☐ ETA (Event tree analysis)	☐ FTA (Fault tree analysis) ☐ Scenario Analysis ☐ Markov analysis

☐ Root Cause Analysis	☐ Bow tie analysis

Other method:

6. Do you evaluate the risk s during the whole life cycle of the project in every part?

☐ Yes

☐ No

7. Do you have a catalogue of risks for further work in other projects

☐ Yes

☐ No

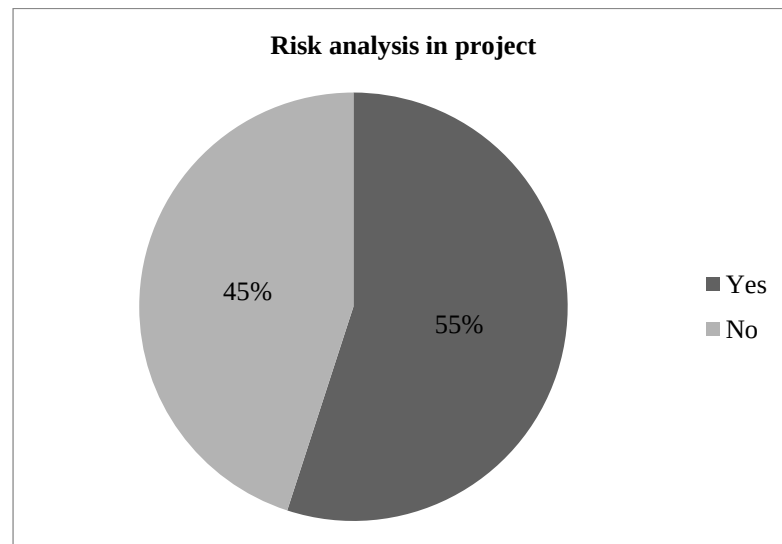
Source: Own compilation

The other parts are similar to this one with other methods of knowledge management and change management.

3 Discussion

The first task was, if the project managers perform the risk analysis. There was a question:

Do you perform a risk analysis in projects? ☐ Yes ☐ No



Source: Own compilation

Figure 1 Risk analysis in project

Project managers in the Czech Republic started to realise that risk analysis is important for project, see the Figure 1. This change in meaning was caused by the opportunity to raise subsidies from the EU, where there is a need to fill in information about risks.

If the answer to the previous question was yes, there are checked the most common answers.

What method of risk analysis do you usually use? (It is possible to choose more variants)

☐ RIPRAN	☐ FTA (Fault tree analysis)
☐ HRA	☒ Scenario Analysis
☐ ETA (Event tree analysis)	☐ Markov analysis

☐ Root Cause Analysis

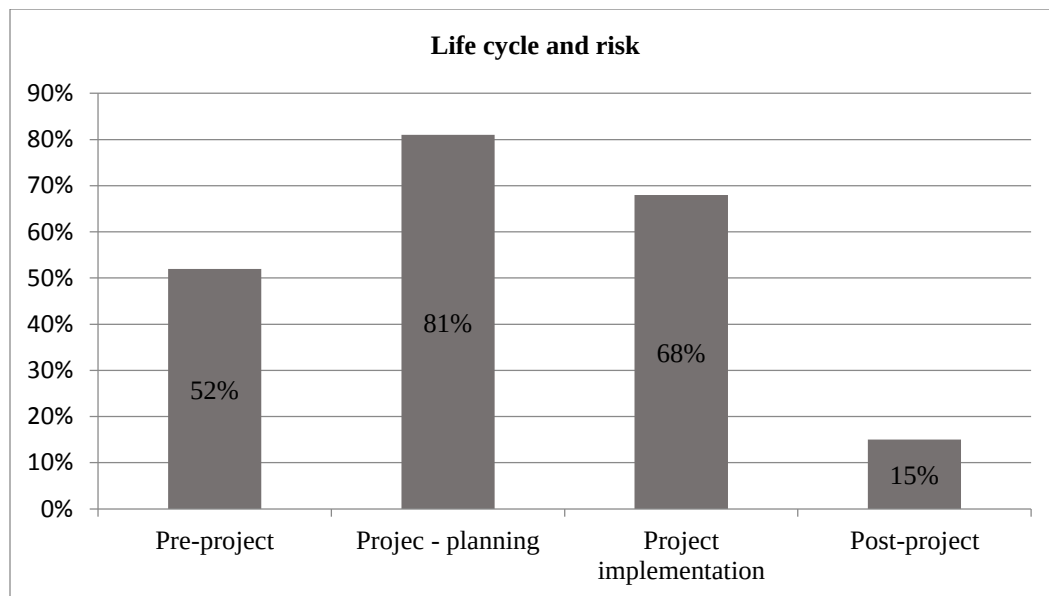
☐ Bow tie analysis

Other method: sensitivity analysis, simulation tools.

Other important question was:

At what stage of the life cycle do you deal with the risk?

- ☐ pre-project;
- ☐ project – planning;
- ☐ project implementation;
- ☐ post-project.



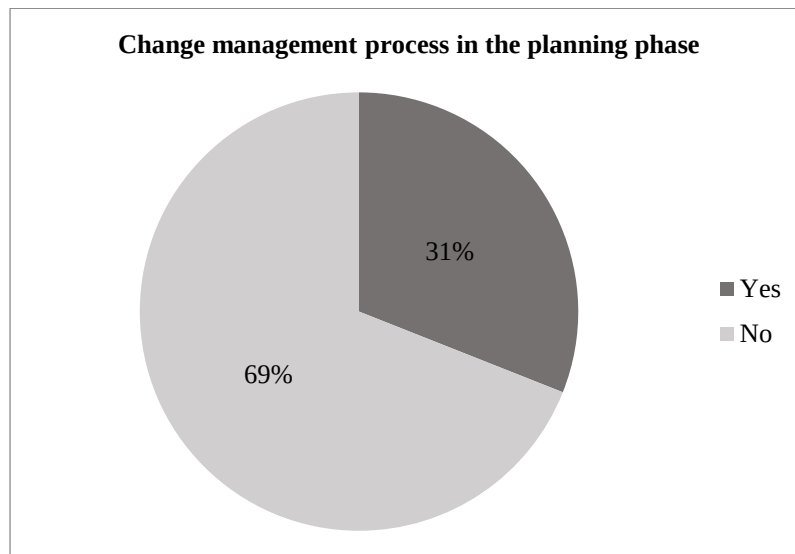
Source: Own compilation

Figure 2 Life cycle and risk

The most common answer was that project managers deal with the risks mostly during planning stage (identification of the risks and evaluation of the risk) and during the implementation of the project (especially monitoring and controlling the risks), see the Figure 2. Unfortunately, some of them do not deal with the risks in the post-project phase, which means, that they do not project evaluation with emphasis on risk assessment project.

From which it follows that they do not create risk register and they do not work with knowledge management in practice, which is negative thing. If we work with post project phase and we create register of the risk then we have advantages for our next projects and we can also avoid making the same mistakes again. It also contributes to increase the quality of the next projects.

Other question was connected with change management process: Do you set up in the planning phase change management process? ☐ Yes ☐ No

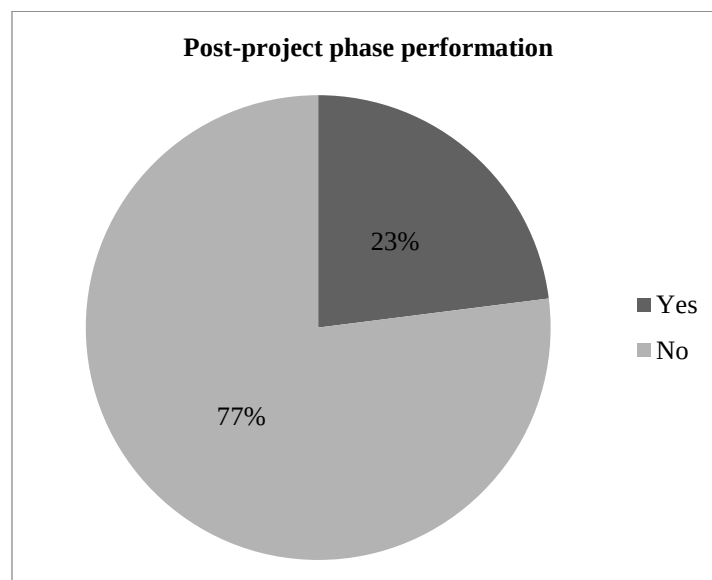


Source: Own compilation

Figure 3 Change management process in the planning phase

It is obvious that most companies during the planning phase do not set up process for change management, see the Figure 3. We recommend that project managers in the planning phase should pay more attention to change management. They should set up change management plane in cooperation with the most important stakeholders.

Do you perform in the projects the post-project phase? ☐ Yes ☐ No; if not please explain why:



Source: Own compilation

Figure 4 Post-project phase preformation

Most of the project managers mention that they do not perform post-project phase because of lack of time, they are also sometimes already working on new projects and some of them admit that they do not consider the post project stage as important, see the Figure 4.

4 Conclusion

4.1 Project risk management

First thing we need to do is get our risk list together. Many project managers first send an email out their project team and ask them about project risks. It is more useful to get the entire project team together and some of our stakeholders – get them all in one room and do a risk identification session.

In the risk identification session, we are trying to find out from every team member the items that they think might go wrong in the project in term of scope, time, cost and quality.

This is very important to starting off our project on the right foot and very essential to ensuring the degree of quality our project will deliver and the probability of delivering on time. Once we have the identification session done, project manager and team members can have a follow – on session to assign the probability of the impact of what tat risk item might be. A degree of probability being low, medium, or high and an impact also being a low, medium or high. Once we have assigned probability and impact to those risks, then we can start developing our mitigation techniques. We should start with our most likely, highest impact risks and work down to our least likely, lowest impact risk to actually develop those mitigation strategies. Once we have developed to quantify the cost of what that mitigation technique might be and also quantify the impact. We need to go back and do all those steps again and revisit them at least weekly. In our project meetings, we need to make sure we are bringing that risks register out. Assess if there are any low risk that are coming up from the project team. Or look at those risks and may be change the probability of occurrence or the impact as they come out.

4.2 Managing changes in project

It is same as with risk – it is always better to get our team together to help project manager with changes. Get our team familiar with the scope of what we are doing. One of the key ways to do that is get them to read the statement of work, look at project schedule, and be familiar with the functional components of what we are delivering. So that might be reading the requirements document and certainly the acceptance criteria.

We want project team members to defend the scope. It is great that our clients has got our trust and confidence and is asking us for new work. But ultimately, project manager is there to deliver particular time frame. When the potential scope item comes up, we have got to manage that effectively. Initially, what we want our project team doing is defending the scope. They should not say no fiercely to the client. But what they should say when a client asks them for a new bit of functionality or a scope changes is, that they will discuss it with project manager. Certainly, we need to use a change request process. Establish a process where we are doing impact assessments for that particular scope item, getting that reviewed perhaps by a steering committee and then planning tat new bit of work into to ongoing basely on schedule that we have already developed.

What is really critical is if we don't get that formal approval and if our team does that scope without getting it, we can't be paid for extra work. In that way, it is incredibly important to make sure our team is trained on not doing any new scope items before we get permission.

4.3 Recommendations for knowledge management

The conducted research shows, that for a number of projects there is not the feedback, respectively, that project managers do not work with post-project phase. Post-project phase is focused on the evaluation of projects and create recommendations for future projects, i.e. creating a project knowledge base. We therefore recommend that the project managers devote this stage, since it can contribute to improving the management of projects and increase the success rate of projects.

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Dynamics of entrepreneurial subjects development in Slovakia between years 2010 and 2014

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Abstract

Purpose of the article Number of self-employed persons (sole proprietors) in Slovakia is steadily decreasing since 2009. While there were 384,202 active entrepreneurs in this category in 2010, the number fell down to 337,182 in 2014. On the other hand, number of limited liability companies is increasing - from 127,778 in year 2010 to 177,110 in 2014. Slovak small and medium sized enterprises have main part of small and medium sized enterprises micro enterprises, and big part is family business. The paper discusses these different trends in Slovak entrepreneurial structure.

Methodology/methods We used the standard methods of research work, such as analysis and synthesis, comparison and standard statistics methods.

Scientific aim The main goal of this paper is to show economic activities of the Slovak small and medium sized enterprises, analyze their strengths and weaknesses in the period from year 2010 to year 2014 and to suggest such solutions for future which should lead to market competitiveness.

Findings It is important to analyze factors influencing decline of sole proprietorship type of companies and if new emerging capital micro-companies are more successful due to their type of business.

Conclusions The paper also shows factors positively influencing competitiveness of small and medium companies in Slovakia. It will be important to return to flexible types in a higher quality and to utilize existing human potential, Slovak and international experience. Enterprises are oriented on distributing products on local markets. For their success in future, it is inevitable to suggest such solutions in economic development, which would satisfy needs of more consumers. Conclusions' implications: We should return to those SMEs in a new, modern form, and take advantage of the existing labour force potential, domestic and foreign experience and possibilities to launch products not only in regional, but also in the global markets.

Keywords: entrepreneurship, self-employed persons, limited liability companies, small and medium sized enterprises, competitiveness

JEL Classification: M21, M13

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Introduction

Successful entrepreneurship is a key activity that contributes to the development of the economy of each country. Therefore, the European Union has also declared support for the creation and growth in particular small and medium-sized enterprises (SMEs). In the materials of the European Commission is declared that the improved economic performance of individual regions, it is necessary to create a system support businesses, attract investment and improve the production capacity of enterprises. This will also help for regions that are still lagging behind. We would like to identify the reserves that exist in the management while making an effort to improve competitiveness of the SME in both domestic and the EU markets.

1 The academic approaches to actual problems of small and medium sized enterprises

The academic community is also involved in the discussions about actual problems of small and medium sized enterprises. For example, Srpová et al. (2010) analysed the problems with starting of entrepreneurship the Czech Republic.

The situation in small and medium sized enterprises is evaluated in other publications (Myšková, 2011). The internationalization of SMEs in the Czech Republic is analyzed in publication about strategic and knowledge development issues (Šimberová, 2014).

Koráb et al. (2008) underline the importance of financial plans for prosperity of the enterprise. The same problem was solved by Tóthová and Tóth (2009). Koráb (2008) also studied family businesses. Human potential in SMEs was characterized Plchová (2012).

The evaluation of the disparity of conditions for entrepreneurship in the Slovakia and in other countries is written in publication of Pilková et al. (2014) and in our publications Šúbertová (2014), Šúbertová, Kinčáková (2014).

Šebej (2011) was analysed relationship between management and controlling of SMEs. Next authors were interested in importance of SMEs in selected country in the world (Đuriš, 2009; Piačková, Koudelková, 2011; Markovičová 2013; Šúbertová, Meszárošová 2015).

Other authors identified problems with price of evaluation SMEs in accounting (Fabian, 2009; Kajanová, Ťlvecká, Saxunová (2015). Businesses for SMEs solved many authors, e. g. Šimberová, Šmakalová, Sychrová, and Milichovský (2013).

External barriers to Innovation in SMEs were analysed by other authors, e.g. Ziarati (1986), Tiwari and Buse (2007). Internal barriers were explained by Neville (2015).

2 The importance of SMEs for Development of Slovak Economy

In Slovakia, the position of small and medium-sized enterprises (SMEs) is very important. Practically in all major macroeconomic indicators they represent more than 50% share:

- 71.7 % of SMEs to employment
- 57.5 % of the profit before tax
- 54.5 % of SMEs in the value added
- 53.5 % of the sales.

SMEs play an irreplaceable role, especially in the employment of the population. Microenterprises with 0- 9 employees represent significant proportion of up to 96.9%, which is dominant. Small enterprises 10-49 employees make up only 2.5%, medium-sized companies with 50 to 249 employees make up 0.5% and only 0.1% of enterprises in Slovakia are large enterprises with 250 or more employees.

The development of Slovak Republic is based mainly on production efficiency and service. Currently investment in the development of science and technology in Slovakia is at a very low level in general and in relation to the development of small and medium-sized enterprises it can be considered as a barrier to growth of the entrepreneurship.

According to Eurostat sources Slovakia is in the last quarter of EU countries in the number of innovations. Most SMEs accounted for innovation in Germany, and in 2010 to 78.55% of the enterprises, Luxembourg 66.71%. On the other hand the fewest contributions to research and development is Bulgaria - only 25.78% and 26.38% Poland. The Slovak Republic is located at the 21st place with contributions to innovation only 33.39% of SMEs.

Lack of financial resources for innovation is a serious barrier to doing business in small and medium-sized enterprises in Slovakia. It is logical that the original European Union member countries have a higher proportion of innovations relative to the higher initial basis, but is questionable, why are countries like for example Malta are ahead with them. That suggests the need to revise the economic policy in relation to investment in science and technology.

Currently, Slovakia has large obstacles or barriers to the development of SMEs, particularly because limited investments into innovation in technology slow down business growth and innovation. Rapid changes in information

systems and information technology create new jobs in areas such as services in the field of IS and communication technologies, e-commerce, which previously did not exist.

According to available data, the Statistical Office of the Slovak Republic in 2013 lack the financial resources for self employed people is being reflected in investments to modern technologies. Less than 1% - 0.8% and it has a high technological level of industrial production, only 5.2% of small businesses have medium high technological level of production. When more than half of business owners, up to 56.7%, have medium-low technological level of production in industry and even a third of entrepreneurs 37.3% in Slovakia has a low technological level of production.

Such a negative trend in the funding of science and technology can be changed only gradually in a long time. For example, economic policy and state policy can systematically provide support to small and medium-sized enterprises, including control of efficient use of financial resources.

A similar situation exists in the case of legal entities, where more than 40% of companies have medium-low technological level and more than one third of the enterprises - legal persons have a low technological level.

Another worrisome problem is frequent changes in legislation. Any change legislation implies changes in the business environment, which may not always be positive or not predictable. For example the Trade Act scored a record number of 95 amendments since its approval in 1991. Social Security Act no. 461/2003 Coll. has been amended 50 times so far. This is a very large number of changes, which may not always capture every entrepreneur in a timely manner and respond accordingly.

In addition when business is doing business with other countries, company not only has to follow Slovak legislation but also laws of other countries. Helpful tool is web based law database system Eulex, which currently contains more than 400,000 documents.

Slovakia's accession to the European Union and the economic crisis has brought to our business - small businesses tougher business environment, representing a sharp increase in shopping centres and the decrease in consumer demand for small domestic stores up to 8%. Thus, large retail chains abroad with established logistics centres "generate" new 18,461 unemployed just from the ranks of traders - traders who have failed to reduce their costs to measure up with large companies with sophisticated marketing activities.

We agree with the argument of Plchová that at the end the main decision makers about business survival are customers that buy the products. „At present the production quality is a decisive factor determining the company success and competitiveness in the home and international market. The quality cannot be linked up only with achieving the certain technical parameters of the production but it must be recognized also by a society. This means that the quality and thereby the survival or failure of business subjects in the market are indirectly dependent on the customers' purchase behaviour” (Plchová, 2012).

In next part of article is published structure of main SMEs in the Slovak Republic. Our analysis is based on the available statistics the Statistical Office of the Slovak Republic for the years 2010 to 2014. Data are used for identification of the present situation in the structure of Slovak enterprises. The database contains all enterprises acting as self-employed persons and limited companies in the Slovak Republic. For our analyses we are using the standard methods of research work such as analysis, synthesis, comparison and statistics.

3 Structure of selected forms of business in Slovakia for years 2010-2014

The decrease in the number of self employed persons by 47,020 businesses for the last 5 years corresponds to the reduction to 87.8%.

Table 1 Branch structure of self-employed persons in the Slovak Republic in the year 2010-2014 (in number of enterprises)

Branch structure according to SK NACE	Year (state by 31th December)					Growth Index 2014/2010
	2010	2011	2012	2013	2014	
Slovak self-employed persons in total	384,202	375,722	359,575	352,709	337,182	87.76
Agriculture, forestry and fishing	12,937	12,961	12,561	13,081	13,157	101.70
Mining and quarrying	31	26	31	40	49	158.06
Manufacturing	62,333	60,481	57,368	55,657	54,604	87.60
Electricity, gas, steam and air conditioning supply	20	21	21	16	14	70.00
Water supply; wastewater treatment	665	582	538	524	531	79.85
Construction	88,260	86,384	81,270	79,891	76,797	87.01
Wholesaling and retailing; repair of motor vehicles and motorcycles	105,301	101,502	95,753	92,286	86,840	82.47
Transport and storage	14,694	14,702	14,565	13,882	9,443	64.26
Accommodation and food services	15,005	14,495	13 857	13,390	13,137	87.55
Information and communication	10,177	10,224	10 231	10,247	10,073	98.90
Finance and insurance	3,841	3,624	3 584	3,606	3,531	91.92
Sale and lease of properties	2,134	2,131	2 108	2,163	2,103	98.55
Professional, scientific and technical activities	34,694	34,429	33 807	33,364	32,257	92.30
Administrative and support services	10,290	10,486	10 424	10,971	11,216	109.00
Education	4,351	4,278	4 281	4,437	4,398	101.08
Health care and social assistance	806	902	992	1,143	1,374	170.47
Art, entertainment and leisure time activities	2,404	2,380	2,308	2, 235	2,145	89.23
Other activities	16,259	16,114	15,876	15,776	15,513	76.70

Source: <http://statdat.statistics.sk/cognosex/>, March, 3rd 2015, the author's own calculations

On the one hand, on the side of small freelancers was a big development in private health services and private education. These are different types of services - whether day surgery, tutoring of foreign languages and to retrain workers, on the other hand almost one third inefficient small firms focusing on transport and storage was closed.

Interestingly, although the economic crisis "caused higher unemployment than before 2008, in Slovakia are existing vacancies in certain fields such as information technology. Mainly in the Bratislava region (up 50%), but mostly it is a place of either highly specialized, such as a specialist in information technology. For a variety of business services, including the services of IT are being established mainly based small capital companies such as LLC. For the years 2010 to 2014 have been set up to 49,332 limited liability companies. Their structure is in Table 2.

Table 2 Branch structures of limited liability companies in the Slovak Republic in the year 2010-2014 (in number of enterprises)

Branch structure according to SK NACE	Year (state by 31th December)					Growth Index 2014/2010
	2010	2011	2012	2013	2014	
Slovak limited liability companies in total	127,778	138,395	148,921	164,970	177,110	138.61
Agriculture, forestry and fishing	2,307	2,431	2,563	2,833	3,048	132.12
Mining and quarrying	140	140	145	143	151	107.86
Manufacturing	11,693	12,132	12,518	13,264	14,006	119.78
Electricity, gas, steam and air conditioning supply	273	332	361	404	417	152.75
Water supply; wastewater treatment	530	575	611	687	763	143.96
Construction	10,357	11,368	12,202	13,365	14,501	140.00
Wholesaling and retailing;	41,080	42,845	45,131	48,858	51,264	124.79
Transport and storage	4,735	5,291	5,749	6,706	7,412	156.54
Accommodation and food services	4,713	5,118	5,472	6,270	6,859	145.53
Information and communication	5,995	6,659	7,346	8,359	9,069	151.28
Finance and insurance	595	625	646	734	710	119.33
Sale and lease of properties	7,740	8,430	8,993	9,811	10,460	135.14
Professional, scientific and technical activities	20,518	23,045	25,504	28,361	30,537	148.83
Admin. and support services, public administration	8,981	10,388	11,868	14,129	15,938	177.45
Education	1,219	1,408	1,573	1,846	2,033	166.48
Health care and social assistance	4,387	4,775	5,133	5,551	5,887	134.19

Source: <http://statdat.statistics.sk/cognosext/>, March, 3rd 2015, the author's own calculations

Limited liability companies registered a big development in virtually all business areas, even where the freelancers failed, such as transport and storage. In general, a big problem is that not every unemployed person is suitable to be an entrepreneur, or at least as an employee.

In Slovakia there are many schools that are targeted to areas of social science theory and evidence are not applicable in economic practice. We have a few specialized secondary schools of technical orientation. Problems in education, which have not been a priority to address in years, it is difficult to repair fast. Also as a result, a third of men 25-34 years unemployed and does not even know how to do business.

The entrepreneurial environment in Slovakia as whole can be characterized especially in the last five year by negative evaluation and therefore also an insufficient support for development activity.

Successful entrepreneurship generally and family business especially is a key activity to the development of the economy in many countries, in Slovakia, too. The assessment of Slovak businesses can be briefly characterized in SWOT analysis as follows in table 3.

Table 3 The SWOT analysis of Slovak small and medium sized enterprises

Factors	S (Strengths) Interest in joining the membership and managerial activities because of self-realization Enough information and communication technologies	W (Weaknesses) Differentiation in approach to small enterprises, negative experiences with complicated tax and insurance system Disinterest in enterprises of self-employed persons
O (Opportunities) top managers' mobility knowledge and experience of senior employees graduates' flexibility and knowledge of IT, language competence	SO approach (maxi-maxi) use of all opportunities by an offensive approach: setting up a company while studying possibility of collaboration of enterprises with organization supporting businesses	WO approach (mini-maxi) more careful use of opportunities: development of collaboration the SME's neighbourhood raising finance from various grants, and external sources
T (Threats) fierce competition in the market frequent changes of legislation referring to business environment, outstanding liabilities from the past in some limited companies	ST approach (maxi-mini) Using a position of strength to stop danger updating the knowledge through foreign and domestic organizations implementing motivation tools for good workers	WT approach (mini-mini) Considerations of compromises manager consider a slow start of collaboration due to various blurred visions of enterprise's future activities

Source: author's materials

The differentiation is given by different activities of enterprises, their different objectives and conditions. Due to lack of funds, potential young workers, or old entrepreneurs are leaving self-employed enterprises for better paid jobs in limited liability companies. In these companies young people see more possibilities, especially in international cooperation, managerial activities, and better information and communication technologies.

4 Discussion

The world Economic Forum evaluates annually countries based upon their Global Competitiveness Index (GCI). Comparatively, in 2010/11 Slovakia had rank 60 with 4.25 points, showing fall down by 15 positions. Therefore, a qualitative improvement across almost all entrepreneurial indicators of environment would be required in order to sufficiently support the entrepreneurial activity in the Slovak Republic.

The most negative evaluations are today these problems: public institutions, especially in inefficient government bureaucracy, corruption, and political instability. The worst evaluated funding option is the access to funding through initial public offerings, which reflects practically non-existent stock exchange in Slovakia.

The big area for problems is starting new SMEs. Low evaluations are also in low enforcement of law, low effectiveness of public finance, low trust of public in politicians. On the other hand, positive evaluations are in low import barriers, openness to foreign investments, low risk of terrorism, high density of spread of Internet. However, some of these positives may have negative influence on domestic entrepreneurs, for example low import duty.

A key problem is the lack of financial resources for innovation in manufacturing and services. Each entrepreneur has to sustain himself and his family, pay an accountant, employee's salaries, and their taxes, insurance, such as local taxes, rent, electricity and other fees, such as maintenance of equipment, not to mention the innovation activity. According to our recent surveys, resources to support business "vanished" in payment of mandatory contributions to the health or social insurance and not in innovation and information technology.

One third of the graduates should be potential entrepreneurs or employees, but the opposite is the truth. They prefer sitting at home waiting for welfare benefits or leaving to work abroad. For this reason it is necessary to change the system of education in schools and business support system to become more attractive.

5 Conclusion

Slovak small and medium sized enterprises have main part of small and medium sized enterprises micro enterprises, and big part is family business. SMEs had in 2014 more than 53 % share of value added and 72 % share on employment.

Business activities of individuals in Slovakia has seen its peak in 2008, since that each year the number of self employed entrepreneurs decreases.

Changing economic and social situation has forced many businesses to close. Nevertheless, Slovakia is consistently among countries with above-average business activities, with more than half a million small and medium-sized enterprises. Entrepreneurship is often carried out from the lack of other employment opportunities, without the necessary capital, but also knowledge or skills. It is fortunate that on the contrary growing number limited liability companies can employ graduates of technical universities and vocational schools. The trend of the creation of new modern enterprises should be continued in Slovakia in the future.

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Changing Perspectives of Aggressive and Passive Exporters Among Smaller Manufacturing Enterprises: A Longitudinal Analysis

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Abstract

Purpose of the article The paper focuses on top operating executives and managers of smaller manufacturing enterprises (SMEs) and describes how their perceptions of exports have changed in responses to significant economic and technological forces in relevant entrepreneurial environments.

Methodology/methods These results are based on studies of SMEs in a number of countries over a forty-year period. Summaries of research findings concerning export strategies and operations among SMEs are presented in three distinct models that depict major economic and technological forces that have changed the evolution of exports strategies and operations among SMEs.

Scientific aim A number of empirical studies and research cases among SMEs have shown that export strategies and operations of SMEs (1) can be related to the type of operating manager, (2) can be classified based on the perceptions of export strategies and operations implemented by operating managers, and (3) are directly related to SMEs' economic and technological environmental changes.

Findings The models can be helpful in two specific instances: (1) informing SMEs' operating managers how to adjust their export strategies and operations to meet the needs of changing economic and technological environmental forces and (2) assist policy makers economic developments specialists in their efforts to promote, stimulate, and develop export strategies and operations among aggressively and passively focused SMEs.

Conclusions Executives and managers need to realize that export strategies and operations represent a form of entrepreneurship, enterprise diversification, and market expansion that are not uniformly suited for all SMEs. It is the responsibility of executives to decide whether or not their export strategies and operations are compatible with their enterprise mission and consistent with available resources.

Keywords: Exporters, SMEs, entrepreneurship, strategies, operations, models

JEL Classification: M16, M31

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Introduction

Smaller manufacturing enterprises (SMEs) build the foundation for economic growth and stability. They provide export activities that governments consider necessary in order to stabilize foreign trade, generate domestic jobs, and increase tax revenues. Efforts by governments to motivate SMEs to export their products have a long tradition. Academic, professional, and government research focusing on capabilities of SMEs to export their products began when government agencies introduced programs for export promotion, stimulation, and development.

From a historical perspective, there are few studies that attempted to monitor the evolution of export activities among SMEs from the perspectives of top operating executives and managers with emphasis on their entrepreneurial propensities. Given the sophistication of current studies in management and related fields, it is important to realize that SMEs are unique and behave differently than larger enterprises. The evolutionary process of export activities among SMEs suggests that this is an area of research that cuts across research areas of management, including the international dimensions of entrepreneurship and export operations. This presentation attempts to provide some historical perspective on this research.

1 SMEs and Entrepreneurial Action

Executives and managers of SMEs consider export activities as a form of entrepreneurship, or more specifically, managerial innovation. Export strategies, but more frequently operations, are perceived as means of stabilizing manufacturing capacity, increasing sales potential, and expanding markets. A significant number of SMEs begin to export opportunistically, and only a smaller percentage of SMEs systematically plan their export activities.

Entrepreneurial aspects of export operations have been challenged by practitioners and researchers alike, depending on their definition of entrepreneurship. The traditionalists (particularly following the definitions of Knight and other economists) suggest that the makeup of entrepreneurship associated with export operations is simply a form of logical diversification—taking an existing product into new markets (Knight, 1957; Hébert and Link, 1988). Practitioners such as Drucker and more recent researchers suggest that any introduction of new ideas, concepts, or even a new way of conducting marketing activities represents managerial innovation—every innovation comes about as a result of entrepreneurial action (Drucker, 1973; Thorelli and Tesar, 1994).

Regardless of how SMEs approach exports operations, strategically or operationally, the decision to export has been historically driven by forces both within and outside the enterprise (Boter and Holmquist, 1996; Tesar and Moini, 2014). Long term research studies that focused on export activities suggest that if export operations result from internal forces, SMEs tend to behave aggressively towards their exports activities. If export activities result from external forces, they tend to behave passively. The differentiation between aggressive and passive exporters is important because it helps to understand, for purposes of public policy and government programs, the differences between those SMEs that systematically plan and develop export strategies and those that merely respond to unsolicited export orders.

More importantly, SMEs that can be classified as aggressive exporters tend to be managed by different types of executives or managers than those classified as passive. Results of longitudinal studies indicate that SMEs are managed by three distinct types of operating managers: craftsmen, promoters, or rational managers. The craftsman type of operating managers tend to be passive regarding export activities, while the promoter and rational manager types tend to be aggressive regarding their export activities (Tesar et. al, 2010).

Similarly, according to the traditional definition of entrepreneurship, it is the promoter type that tends to practice entrepreneurial tendencies in developing export operations. In other words, the craftsman is much more interested in producing a product than marketing it. The rational manager is more interested in long term objectives – how to use available resources to strategically explore markets and market opportunities. This does not mean that any of the three managerial types may not have latent entrepreneurial tendencies, to some degree, at some point in time (Tesar et. al, 2010).

SMEs that are aggressive towards export activities seek market opportunities. Passive exporters respond to unsolicited export orders, i.e. orders that have been passed on to them by a third part such as a government agency, referral from a customer, or some other entity which may directly or indirectly benefit from export transactions. Such behavior by passive exporters may also be described as passive entrepreneurship. However, within the context of the three types of operating managers, passive entrepreneurship is generally found among craftsmen type, and to some degree, among promoter type operating managers (Tesar et. al, 2010).

2 Level of Enterprise Action among Smaller Manufacturing Enterprises

Several types of individuals—entrepreneurs, innovators, scientists, or engineers, typically establish smaller manufacturing enterprises; each type perceives a future payoff—economic, social, or psychological. After the venture starts these personalities are transformed, very quickly, often out of necessity, to individuals with characteristics and

capabilities of a craftsman, promoter, or rational manager. The craftsman type top-operating officer becomes more interested in the scientific or mechanical process of his or her SME than in its management. The promoter finds it necessary, for various evolutionary reasons, to promote the entire venture rather than its products, or manage the SME. Finally, the rational manager is the one who takes a balanced approach to marketing the SME's product, promoting its venture, or managing its entire creative process (Tesar et.al, 2010).

Planning becomes important for growing SMEs. Depending on which managerial profile is actually responsible for a given SME, this will also determine if, and how, the individual will plan systematically. Not all operating managers plan, and if they do, they do not plan for similar outcomes.

Because SMEs tend to be managed by different managerial types, the degree of control within SMEs also varies; these fluctuations have a significant impact on SMEs' competitive positions. Studies indicate that the craftsman believes that his or her products are the best available and that his or her SME has no competitor in the marketplace. The promoter tends to confront competitors directly. The rational manager believes that selecting a suitable unique market niche eliminates any competitors.

Perhaps the most important aspect of this level of enterprise action is concerned with how SMEs' top operating officers identify and select their short and long term goals. The process of goal selection is very much a function of each top-operating officer. The craftsman type simply wants to sell the product; the promoter wants to promote the product and the entire operation; and the rational manager seeks a stable position in the marketplace. Goals mean different options for different SMEs—a goal to export products at some point in time may be elusive for craftsmen, somewhat realistic and even necessary for the promoters, but a daily reality for rational managers.

The above classification of executive and managerial talent managing the entire range of SMEs is useful in understanding how export activities emerged among them. Craftsmen tend to ignore exporting activities; promoters tend to export their products systematically and opportunistically; while rational managers do so routinely. And, they all are, to some degree, potentially entrepreneurial.

3 Managerial Perception of Export Related Strategic and Operational Concerns

Smaller manufacturing enterprise, viewed from the perspective of their top operating officers, suggests that they initially perceive a great deal of risk involved with export activities. Studies conclude that most SMEs involved with export activities confront specific decisions—a decision to systematically eliminate perceived obstacles to exporting, a decision to export, and a decision to make a commitment to exporting. Each decision is accompanied by a degree of perceived risk, which may impact the future of the SME.

In high technology startups, the issue of risk is significant—competitors in foreign markets may copy the initial idea, the startup may not get paid, or may not have direct contact with the user. These concerns and many others reflect SMEs' reluctance to make an export decision and formulate sound export strategies and operations. The more inexperienced SMEs may choose to export only when they profit from the transaction.

4 Key Historical Aspects of Export Strategies and Operations

The original academic, professional, and governmental research addressed the issue of dedicated export strategies and operations among SMEs (Neidell, 1965). The objective of early researchers was to answer fundamental questions about exports, using descriptive or exploratory approaches, and unsophisticated empirical studies (Simpson, 1973; Weinrauch and Rao, 1975). The researchers conducting some of the seminal research studies realized that in addition to dedicated export strategies and operations, SMEs also export opportunistically by responding to orders brought to them by suppliers, customers, banks, governmental agencies or other sources deemed reliable. Results of the earlier studies also suggested that SMEs would occasionally respond to unsolicited orders. Although unsolicited orders frequently carry a great amount of risk, SMEs used these orders to reduce their unwanted inventory or sell obsolete or marginal products.

The earlier dedicated export strategies and operations among SMEs were predictably based on a series of systematic decisions concerning allocation of their available resources and an examination of current competitive position related to existing marketplace conditions. In most cases, dedicated exports were based on long terms plans combined with a clearly defined domestic and foreign competitive advantage. Furthermore, the researchers also suggested that SMEs have a well defined set of preferred foreign clients with bank guaranteed payment assurances (confirmed letters of credit) and support service availability for their products. This is reflected in statistics indicating that in the late sixties and early seventies; North American SMEs generated approximately five to twenty percent of their total revenue from exports. These statistics were much higher at the time among European SMEs.

Opportunistic export strategies and operations were, to a certain degree, also based on a systematic decision to exports, but priorities were attached to specific orders. SMEs frequently prioritized their opportunistic orders based on the level of perceived risk. In some cases opportunistic orders from suppliers or customers carried less associated risk than orders from government agencies. For some SMEs opportunistic orders were used to balance seasonal sales or increase their

sales volume. In general opportunistic export strategies and operations provided some flexibility for SMEs to experiment with export expansions, identify new market opportunities, or embark on geographic expansion. For example, some SMEs located in the United States would routinely export to Europe but would experiment with markets in South America, especially in Brazil, Argentina, or Chile. European SMEs would prefer European customers for their products and opportunistically experiment with North America markets.

In the early stages of export research, unsolicited export strategies and operations were formulated to respond to orders from unknown sources or governmental agencies. Typically sources unknown to an SME would send orders, sometimes accompanied by a confirmed letter of credit, to the SME by regular mail with a note that they read about its product, attended a trade show where its product was presented, or attended a government sponsored seminar at the United States embassy in their country. In the early stages of exporting many orders were completely ignored by SMEs (Tesar, 1976). So-called international trade specialists from the local, regional, or national economic or regional agencies repeatedly visited SMEs in their territories to urge them to respond to unsolicited orders. The top operating officers of SMEs generally had no written or stated policies or procedures to fill these orders. Many of them felt that the risk was too high to fill the order.

The diversity of strategies and operations in the early stages of export activities suggest that smaller manufacturing enterprises viewed exporting as secondary activities to their primary domestic marketing activities. This was initially the case both in North America and Europe. Exporting as an integrated activity into SMEs' strategies and operations began to appear during the late 1960s and early 1970s when the economic climates started changing and a new economic order emerged in Europe, North America, and Australia. In many economic systems the emphasis changed from government initiated trading and trade policies to SMEs' based exports.

5 Conceptual Analysis of Historical Events

It is important to consider that before export strategies and operations among SMEs received attention from government policy makers, trade regulators had little if any contact with SMEs in general except for statistical reporting of trade crossing national borders. The reported aggregate statistics were used to maintain databases designed to study foreign trade flows for individual countries. International trade researchers suggested that what triggered the expansion of exporting in many countries were their growing trade deficits. Starting in the early 1960s, this was the situation in the United States (Kindleberger, 1962). By late 1960s the United States Department of Commerce realized the need to expand exports; similar conditions existed in European countries as well.

Government agencies were established and programs introduced specifically to encourage enterprises, particularly SMEs, to export products. In the United States, virtually every State had its own agency or an office dedicated to assist SMEs in their efforts to export.

Because of the traditional political and social distance between government agencies and private enterprise in the United States, international trade specialists were only allowed to "bring" orders to individual SMEs. They could set up local "export" workshops, or organize foreign trade missions, but they could not offer hands on assistance related to operations. In European countries, the situation was slightly different. In Denmark, for example, a government agency could "subsidize" a marketing research study for an SME that intended to develop exports in a specific foreign market. In Sweden, export assistance specialists could offer assistance directly or refer clients to Foreign Service offices abroad.

Assistance from government agencies, trade associations, banks, and other local or regional economic development bodies led to exporting becoming an increasingly important component of SMEs' strategies and operations. The relationships between government agencies in many countries strengthened. A number of new ventures eventually relied on export orders from local, regional, or national governments.

Research initiatives during this period focused on how exports in general could be increased to offset rising national deficits (Moini, 1998; Czinkota, 1982). Most research initially addressed research questions on organizational levels. Later studies began to examine leadership of SMEs as related to initiation of exports. Finally, a series of research studies questioned various aspects of the strategic and operational dynamics of SMEs as they related to export performance (Bilkey, 1978; Bilkey and Tesar, 1977; Cavusgil, Bilkey, and Tesar, 1979; Moini 1995). It should be noted that the early export research studies almost exclusively considered smaller manufacturing enterprises as their units of research and had little to do with behavioral concerns of their organizational orientation or their relationships to "international," "multinational," or "global" markets. Such terminology evolved later.

6 International Trade

International trade theories provided the foundation for broad export theories and helped outline initiatives government agencies could explore to motivate manufacturing enterprises to export (Root, et. al, 1966). In the past, international trade theories were developed for regulating foreign trade. Governments worldwide were typically interested in regulating imports and expanding exports. During this period, governments begun to heavily subsidize

exports and limit imports by instituting tariffs, negotiating quotas, specifying safety standards, and introducing consumer protection issues (Glickman and Woodward, 1989).

The direct effort by government agencies to motivate SMEs, to develop export related strategies and operations, was a major change in international trade policies. This change was responsible for the emergence of “international business” or “management.” At about the same time, these changes were rapidly supplemented by pioneering educational efforts in trade schools and universities in the United States and Europe (Servan-Schreiber, 1968; Heller and Willatt, 1975). Export support groups emerged on local and regional levels in the United States such as “export clubs,” “trade associations,” or “export councils;” all to some degree, were sponsored by State or Federal agencies. Members of these groups frequently were banks, consulting agencies, transportation companies, custom packing specialists, local and national economic development agencies, university professors, and law firms among others. Their objective was to interest enterprises in exporting. Consequently, it was primarily the increasing concern over deficits that triggered overall interest in export studies (Tesar and Tarleton, 1983).

7 Exporting

Smaller manufacturing enterprises responded to the shift from macro to micro aspects of foreign trade; at the same time the economic environment started to change. SMEs started looking for opportunities to expand their operations and improve their profits. Exporting was potentially a viable option, but carried risk for many SMEs. SMEs managed by professional managers who understood the potential of exporting and were able to systematically assess the risk involved in exporting, began to formulate export strategies and initiate operational procedures to export their products—frequently with external assistance.

SMEs had two options to export their products: (1) direct exports and (2) indirect exports. Direct exports were those the exporting enterprise had control over who purchased the product in a foreign market and who reduced product’s economic, social, or psychological utility (who actually used the product). That is, the exporter had direct contact with the customer, and in some cases, with the consumer. Indirect exports were those shipments, or transshipments, for which the exporter used an agent, brokerage house, export trading company, or another intermediary to move the product from the exporter to the end client. The exporter had little knowledge about the actual end user, the end user’s location, or the actual application of the product.

A number of research studies suggest that this was a learning process for many existing and potential exporters. Researchers tried to identify how exporters decided to export their products (a fundamental aspect of executive decision making), how top operating officers exporting their products tended to operate their enterprises strategically and operationally (development of personal profiles), and how successful SMEs exported their products profitably (Neidell, 1965; Robinson, 1967; Simpson, 1973).

It is important to note that none of the studies conducted during this period were based on well proven theories; these were characteristically empirically based exploratory statistical studies, frequently descriptive classification studies. It is equally important to note that, even though some later researchers consider these studies as integral parts of the later internationalization theories, as platforms for international “business” or “management” theories, or other aspects of international, multinational, or global theories—they were not. Export studies were a phenomenon of its time (Tesar, et. al, 2010).

8 Changes in Managerial Approaches to Market and Technological Events

In order for the SMEs to survive they must be willing to change. Constant market and technological changes not only create new opportunities but also create major challenges. Both opportunities and challenges may result from governmental policies, or they may come about as a response to major economic necessities, technological innovations, consumer lifestyles, changing societal preferences, or strong foreign competitive forces. If SMEs strive to survive, grow, and compete successfully, they need to change.

Research indicates that a number of events triggered major changes over the years in trade strategies and operations leading to theoretical and conceptual changes in exporting activities (Durant, Durant, 1968; Vernon, 1971; Micklethwait and Woodridge, 2003). From the perspective of SMEs, and their eventual involvement with export activities, there were four major events that triggered these changes: (1) growing trade deficits worldwide, (2) the Internet, (3) changing managerial perspectives, and (4) introduction of the global perspective (Drucker, 1993; Porter, 1980; Ettlie, 1988; Chandler, 1990).

8.1 Trade deficit

In the mid-1960s governments around the world began to realize that trade relationships were rapidly changing due to changing preferences of customers in foreign markets; countries begun to lose their natural competitive advantages which resulted in growing deficit crises or dilemmas. The first indication of the growing deficit dilemma started in the

United States, closely followed by Canada, Europe, Australia, and South America. Some countries such as Great Britain or France experienced trade deficits even before the 1960s but the major changes in managerial perspectives with respect to exporting were triggered in the United States in the fall of 1960 (Root, et. al, 1966).

Reactions to the growing trade deficit dilemma differed around the world; most immediate responses in government policies first appeared in the United States and European countries. Perceptions of the trade deficit dilemma especially by the smaller manufacturing enterprises were passive. Larger manufacturing enterprises already managed their worldwide operations via exporting, but were also engaged in foreign markets in several different ways (Vernon, 1971).

Consequently, governments realized great export potential, and eventual reduction of their trade deficits, among SMEs. Governmental agencies worldwide began developing programs to encourage SMEs to export their product; manufacturing segments were targeted and charged with specific export objectives resulting in even more intensive foreign competition and erosion of competitive advantages. SMEs that were leaders in their home markets simply could not compete in many foreign markets.

8.2 Internet

Since the early and mid-1990s the Internet has had a major impact on how smaller manufacturing enterprises manage their strategies and operations and how they function in the context of exports. For many SMEs the Internet with its web pages revolutionized how SMEs manage their dedicated exports, respond to opportunistic orders, and how they tend to fill unsolicited orders when it is appropriate to fill them (Moini and Tesar, 2005).

What revolutionized the entire scope of exports for SMEs were: (1) the introduction of enterprise websites, (2) the ability to communicate directly with existing and potential customers, (3) the ability to identify and communicate with key clients and offer them special "password" privileges, (4) including key clients in the process of developing new products or modifying existing products, and (5) making it possible for clients to place an order directly "on line" anytime and anywhere in the world.

A combination of these factors changed the nature of exports among SMEs, and also changed their management perspectives eventually leading to a special form of "internationalization," mostly by dividing their managerial skills between domestic operations and "the Internet based management environment." From recent discussion with top operating officers of SMEs it still appears that they never really became "internationalists in their abilities," but rather skilled Internet based "transaction managers."

9 Managerial Perspectives

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There appears to be an aspect of internationalization within the export related literature. This emerging international perspective has been most apparent among high technology SMEs with strong engineering or scientific objectives—most likely due to a higher level of education or training. Some researchers suggest that top operating officers of high technology SMEs participate in extensive international personal networks. Some of these networks result from studies abroad, foreign employment, or other professional or personal arrangements. Many such SMEs have a foreign markets orientation when established because they frequently design and fabricate products to clients' specifications. In many cases their clients are former associates or even personal friends (Tesar and Ghosh, 2011).

Studies also suggest that rational managers operating SMEs tend to have a broader international perspective than the promoter or craftsman manager. Some studies suggest that this may be due to the rapidly changing external social, economic, technological, and legal environments. The principal drivers behind the process of changing the international managerial perspective tend to be: (1) changing nature of international competition, (2) rapidly expanding information technology, and (3) dramatic changes in international educational opportunities. Nevertheless, the changing international managerial perspective is also changing how SMEs are internalizing and organizing their export strategies and operations.

The emergence of the global perspective in the early 1980s presented a new dilemma for many exporting SMEs. The global technological climate intensified and presented new challenges, but it also impacted SME's perception of their

competitive advantage. Many SMEs believed that they had ownership of unique technology, knowhow, or at least technological skills. This was not true.

Many SMEs believed that they could produce the best product in the world most economically and sell it at a reasonable price. They could not do so. In order to produce a marginally competitive product and market it in domestic or export markets, they had to source components abroad. These economic pressures changed the way SMEs examined their domestic and export opportunities.

Because SMEs, especially high technology SMEs, do have some unique skills and abilities to innovate, they rapidly became reluctant participants in supply chains and frequently become intermediaries in global supply chains. In order to survive, they quickly had to become skilled in unique export transactions not bounded by the tradition rules of export.

Some SMEs were asked or actively sought memberships in value chains, many of which are global. SMEs, as business-to-business participants in value chains, are asked to export their products to several manufacturing points around the world without contacts with their end customers or users. These relationships are frequently based on trust and performance rather than deep understanding of the end market for their products. Many exporting SMEs are losing market knowledge and the sense of their own unique competitive advantage (Greider, 1997).

10 Relationships between Governments and Smaller Manufacturing Enterprises

The world for exporting smaller manufacturing enterprises and their top operating officers is becoming more complex and more competitive. Social, political, and technological distances between a country's government and its SMEs are becoming closer. Not only are governments around the world interested in growing and promoting SMEs, but they also provide direct assistance to help SMEs grow and succeed in an era of global markets. Governments introduce programs that help new ventures start, emerging engineering startups to grow, or help existing SMEs penetrate foreign markets. SMEs' top managements are learning to accept these programs.

10.1 Government-based programs

Government-based export activities and related program typically include a three-step approach: (1) promotion, (2) stimulation, and (3) development. Each step in the process has a specific objective. Export promotion is responsible for communicating benefits of exports to public enterprises and the public—primarily benefits of increased tax revenues, economic stability, and job creation. Export stimulation focuses on increasing awareness and participation in export strategies and operations by public officials, taxpayers, and the SMEs. Export development is charged with providing direct public assistance, as much as politically possible, to SMEs to motivate them to export their products. These programs are frequently referred to by government agencies as EPSAD programs (export promotion, stimulation, and development). Most of them originated as a byproduct of the "Wisconsin-based" studies (Bilkey and Tesar, 1976; Cavusgil, Bilkey, and Tesar, 1979).

10.2 Regional incentives

Incentives offered by regional governments or regional government alliances became instrumental in EPSAD programs. Many regional entities cooperated to develop suitable infrastructure to help SMEs export their product. Development of regional custom zones, improvements in transportations systems in ports and airports, shipment of sealed containers, or identification of port facilities as international became common in North America, Europe, and elsewhere.

10.3 Local incentives

Local export specialists were appointed to help SMEs identify suitable products for exports, draft export strategies, and outline detailed export operations. Many export specialists work inside SMEs on daily bases. In the United States, the Department of Commerce established regional offices to provide custom information about potential distributors, sales agent, or even, initially without any cost to the SME, develop market profiles. Such local efforts substantially shortened the distance between government programs and SMEs' top management.

11 Stages of Export Activities

The entire field of research and its focus on monitoring evolving strategies among smaller manufacturing enterprises, may be described is a single aggregate conceptual model describing factors that were subject to extensive empirical research, and, in many cases and time after time, verified by comparative studies across countries (Joynt, 1982; Kaynak and Stevenson, 1982; Garnier, 1982). The focus of the aggregate model is on export strategies and operations of smaller manufacturing enterprises (and excluding service companies, consulting agencies, software enterprises, or any other nonmanufacturing establishments). The aggregate conceptual model may be subdivided into three stages.

11.1 Stage I

The individual factors relevant in export activities before the 1970s largely make up Stage I. Export strategies and operations during this period were primarily dependent on two major sets of factors: (1) organizational factors and (2) the decision to export. The organizational factors included propensities of top operating officers to (1) make sound decision, (2) have the ability to identify and plan courses of action, (3) identify competitive advantage, and (4) judge the importance of goals. The decision to export was typically the outcome of a combination of organizational factors and the ability of the top operating officer to make a decision. Research studies clearly indicated that the decision to export, in most cases, was a unique decision.

If the conditions of the export decision were met, dedicated export strategies were implicitly or explicitly formulated and implemented; where appropriate, however, opportunistic exports were also sought and this action generally resulted in systematic and ongoing exporting activities.

Economic development specialists and management researchers generally consider the export activities in the first stage as evolutionary under the conditions of increasing trade deficit and the necessity of government agencies to focus more on potential sources of profitable. Many research studies from that period confirm these observations.

11.2 Stage II

Stage II covers the period from the 1970s to the 1990s. The major development in this stage was the introduction of government-sponsored programs such as export promotion, stimulation, and development combined with systematic delivery of unsolicited export orders to primarily SMEs. From the perspectives of SMEs, unsolicited export orders were either rejected or considered opportunistic by some SMEs. This was a very dynamic stage especially for smaller startups that were looking for quick entry into a marketplace.

The second stage of export activities depicts more aggressive approaches from government agencies and increasingly targeted efforts to motivate SMEs to more aggressively export their products.

Findings of research studies from that era suggest that to better target aid from government agencies, SMEs were classified as aggressive or passive exporters. In addition, because EPSAD programs in the United States had multiple audiences—the public and the SMEs—there was some friction between them. The public perceived the additional tax revenues, additional jobs, and stable economy from exporting SMEs as economically and socially desirable. At the same time, some SMEs were simply not prepared to export their products—because they did not have the managerial capabilities to do so, the products did not fit foreign market, or were too expensive to export. Some SMEs were satisfied with the performance of their domestic markets and not willing to expand their operations.

11.3 Stage III

After the introduction of the Internet in the 1990s, smaller manufacturing enterprises entered Stage III. In this stage the major factor was the availability of the Internet combined with SMEs' willingness to market their products via web pages. In some cases, the Internet changed SMEs' marketing practices overnight. Immediately after they posted webpage ordering, SMEs were overwhelmed by orders, frequently unsolicited or totally inappropriate orders.] In the third stage, SMEs with web pages were reluctantly driven to exports. Attractive export orders came from many parts of the world. Some SMEs simply did not have the capabilities to fill these orders. Others attempted to expand their export capacity by supplementing their manufacturing facilities by using outside suppliers, but it was difficult for some to maintain their marketplace credibility and quality. In fact, for some SMEs the Internet exposure became detrimental to their existence.

The historical three stage perspective above reflects not only the variety of research studies that were needed in order to provide an understanding of the entire export process as experienced on several levels by SMEs, but also to better understand the factors that were instrumental in motivating SMEs to make a decision to export. Additional research focusing on specific factors in the entire export process may still be needed to expand understanding of export activities among SMEs.

12. Integration and Conceptual Frameworks

This historical analysis is based on results of research studies, empirical observations, and participatory experiences that focused only on export related activities. Since awareness of and importance of export activities emerged at about the same time in many parts of the world, it is plausible to construct a single aggregate conceptual model that represents components of the models that were empirically tested. The model is based on many of the theories and concepts that were formulated and tested while export activities were evolving among SMEs. From a scientific perspective, the model is applicable only to SMEs and is not to be considered as part of the later overall internationalization process that provided a foundation for "international business theories."

It should be noted that the only conceptual construct that is integral to the study of export activities is the so called Stage Theory which was formulated as a means of understanding how SMEs proceed, or make decisions, about export activities. The stage theory was a managerial tool used by export development specialists to identify potential exporters and assist advanced exporters with their activities—nothing more. Some early export studies focused on smaller manufacturing firms only and excluded any other commercial entities. Internationalization as a managerial phenomenon and focus of research came later (Czinkota and Tesar, 1982a, 1982b).

Conclusion

Research concerning export activities among SMEs has evolved over many years. Its initial focus was on how SMEs as organized units of activities operated by often singularly minded top operating officers would respond to new activities necessary to reduce a country's trade deficit, increase tax revenues, generate jobs, and stabilize the economy. Results of early research studies were directly applied to efforts to increase export activities among SMEs in a particular location.

As economic and technological conditions changed and governmental policies stipulated direct involvement in SMEs activities in an attempt to increase their export levels, a new type of research was needed. Researchers started focusing on behavioral aspect of SMEs: who manages them, what decisions do top operating officers make, and under what conditions? The results of these studies were also used to identify and motivate SMEs to export their products. Targeting SMEs for exports became one of the integral activities of local, state, and federal export development specialists.

Exporting as a managerial activity became more complex with additional technological advancements—the Internet. Many SMEs were introduced to export activities via the Internet after posting web page. For SMEs that were locally or regionally oriented, the webpage generated unsolicited orders, more specifically, exposure to the world. Only then did some reluctant SMEs consider exporting as a valid managerial activity.

Export activities, export decisions, and export processes in addition to other issues faced by smaller manufacturing enterprises and the implications of entrepreneurial action among them are still considered to be important for research and present unique opportunities, especially among small startup ventures or smaller manufacturing enterprise in economically challenged areas of the world.

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Exploring the concept of social innovation

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Abstract

Purpose of the article The purpose of the article is to reflect the results of the authors' conducted research that was aimed to contribute to understanding of the concept of social innovations.

Methodology/methods To achieve the established goal, an analysis of the textual information was performed, using software AQUAD 6.0. Information data base included 51 definitions of the term 'social innovation' proposed by individual researchers, governmental and non-governmental institutions and research agencies. Content analysis was performed, using the procedures of open-coding, theory-based coding and analysis of frequencies. Theory-based coding was conducted in collaboration with an invited expert. To measure an inter-rater agreement, Cohen's Cappa coefficient was calculated.

Scientific aim The goal of the research is to provide an insight into the concept of social innovations by studying its development and identifying its core elements and features.

Findings Deep analysis of the definitions of the investigated concept yielded five elements assigned to social innovations: 1) social goal, 2) transformative power, 3) crossdisciplinarity, 4) new relationships and collaboration forms, and 5) impact on society's capacity to act. Besides, the question about the main outcomes of the implementation of social innovations was explored. Based on the research results, the conceptual model of social innovations was created. The model involves three content blocks: inputs (drivers), core elements (features) and outputs (impact).

Conclusions The given study was conducted within the framework of the research project, which brings together scholars from several universities. Thus, it was critically important to come to the consensus on understanding of the meaning of the analysed concept. Besides, exploring the concept of social innovations provides a platform for further investigations in the field of impact measuring, evaluation of state/sector/company's potential to implement social innovations and etc.

Keywords: social innovation, conceptual model, content analysis

JEL Classification: O350

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Introduction

Social innovation is a multidimensional concept that is in the focus of public attention during the last decade. Its emergent popularity becomes obvious from the growing number of the related scientific publications. The call for 'social innovation' in Google Scholar data base yielded more than 1.2 million results (papers published since 2005).

The issues in regards to social innovations are on the agenda in the European Union. This resulted in the implementation of the topic into EU and national strategic plans and programmes (European Commission, 2010, 2012b, 2013a, 2013b).

The urgency of the questions related to the development and successful implementation of social innovations is caused by external factors' influence. Social innovations respond to the global challenges faced by the society (European Commission, 2012b; Harris and Albury, 2009):

- Ageing society;
- Rise in long-term debilitating health conditions;
- Environmental problems, pollution;
- Climate change;
- High level of unemployment, in particular youth unemployment;
- Lack for cohesion;
- Educational problems, citizens' illiteracy;
- Risk of poverty or social exclusion.

The wide range of problems that probably can be resolved by means of social innovations explains the fact that the understanding of the concept of social innovations differs widely among different stakeholders. The term is defined from very different perspectives, highlighting different elements. Thus, the research question is, as follows:

What are the core elements and features of social innovations?

The goal of the current research is to construct a theoretical framework of the concept of social innovations. To achieve the established goal, an analysis of the relevant literature was performed. For the research purposs the authors collected 51 definitions of the term 'social innovation' proposed by individual researchers, governmental and non-governmental institutions and research agencies.

Data analysis and processing was conducted, using the following algorithm:

1. Theory-based coding was performed by the authors aimed to determine the most frequently used content area for definition of social innovation. To measure an inter-rater agreement, Cohen's Cappa coefficient was calculated.
2. Data analysis by means of AQUAD 6.0 software, applying the procedure of open-coding, was performed. Besides, the extracted definitions were analysed to define the main fields for implementation of social innovations and main outcomes.
3. Based on the research results, conceptual model of social innovation was created.

The current paper contributes to the body of knowledge in regards to social innovations and provides a platform to further research in the field. The study is conducted within the framework of the National Research Program "Economic Transformation, Smart Growth, Governance and Legal Framework for the State and Society for Sustainable Development – a New Approach to the Creation of a Sustainable Learning Community (EKOSOC-LV)". This, in turn, also requires an investigation of the concept to get the common viewpoint on the terminology used among the project participants.

1 The core of social innovation

The most popular definition of the term 'social innovation' that has been used by many researchers in their works, as well as by representatives of governmental and non-governmental organisations in their reports (Tucker, 2014), was proposed by Mulgan (2006):

„Social innovation refers to innovative activities and services that are motivated by the goal of meeting a social need and that are predominantly diffused through organizations whose primary purposes are social.”

In turn, European Commission (2013a) defines social innovations as a "development and implementation of new ideas (products, services and models) to meet social needs and create new social relationships or collaborations."

Many researchers argued that the term 'social innovation' is used in various and overlapping ways in different disciplines (Pol, Ville, 2009; Edwards-Schachter, Matti, Alcántara, 2012; Ümarik, Loogma, Tafel-Viia, 2014, etc.).

Minks (2011) identified common, core elements of social innovation as follows:

- *It is something new* – a new approach, a new idea, a new strategy, a new program – that's not just new for the organization implementing it, but "pattern-breaking" or even "disruptive";
- *It solves a problem* – creates social value, serves the public good, improves people's lives in some way, leading to transformative, societal change;
- *It can be done by anyone* – nonprofits, governments, businesses, foundations, the academic community, individuals, or some combination.

Bulut, Hakan, and Duygu Seckin (2013) concluded that "there are three common traits about social innovation: *a need, an effective solution, and benefiting from the solution* in individual, organizational or societal level."

The review developed by Edwards-Schachter, Matti, and Alcántara (2012) resulted in the identification of several dimensions in which the concept of social innovation is defined and discussed. These are: aims, purposes/objectives, drivers, sources, context, agents, sectors, process, results/outcomes, and aspects related to governance, empowerment and capacity building.

Based on the study conducted by The Young Foundation (2012), the term 'social innovations' has been used in the following contexts:

- *Societal transformation*. Examples of topics: the role of civil society in social change, the role of social economy and social entrepreneurs in delivering economic growth, problems of social inclusion.
- *A model of organizational management*. Examples of topics: business strategy related to changes in human, institutional and social capital to improve efficiency, organisational restructuring, improving human resource management, sustainability of non-profits.
- *Social entrepreneurship*. Examples of topics: creating new social ventures, definition of social enterprise, behaviours of social entrepreneurs, and the role of social enterprises.
- *The development of new products, services and programmes*. Examples of topics: public sector innovation, public service provision by social enterprises.
- *A model of governance, empowerment and capacity building*. Examples of topics: relationships between societal actors, skills and competences of various actors needed to implement social programmes.

The wide range of different contexts in which the term 'social innovation' has been used confirms the necessity for applying statistical methods for analysis of proposed definitions.

2 Research design

For the research purposes the authors collected definitions of the term 'social innovation', using scientific data bases Google Scholar, Scopus, EBSCO, ScienceDirect, reports and documents provided by the European Commission and other authorities, as well as papers published by non-governmental organizations. As a result, 51 definitions and text segments were collected. Data set can be divided into three content blocks according to the information source:

1. Definitions of social innovation, which are used by national and international political and economic authorities, for instance, the European Commission (EC), Organisation for Economic Co-operation and Development (OECD), the Ministry of Education and Science of Latvia (OECD, 2011; Noya, 2011, 2012; European Commission, 2010, 2013a; Le Mounier, 2014; Tucker, 2014; the Ministry of Education and Science of Latvia, 2013; Barosso, 2013).
2. Definitions of social innovation, which are used by non-governmental organizations (NGOs), non-profit organizations and research institutions (Bacon et al., 2008; Murray et al., 2010; Mulgan et al., 2007; Phills et al., 2008; Pearson, 2006; Kasper, 2008; The Young Foundation, 2012; Nilsson, 2003; Centre for Social Innovation, 2015; TEPSIE, 2013; SELUSI, 2013; SPREAD, 2013; SINNERGIK, 2013; Harris and Albury, 2009; Urama and Acheampong, 2013; The Young Foundation, 2015; Sociālo Inovāciju Centrs, 2015; Goldenberg et al., 2009; CPRN, 2004; Westley, 2008).
3. Definitions of social innovation, which are used by individual researchers in the academic and business environment (Matsuyo, 2012; Bergman et al., 2010; Mumford, 2002; Hämäläinen and Heiskala, 2007; Neumeier, 2012; Moulart et al., 2005; Gerometta et al., 2005; Heiskala, 2007; Pol and Ville, 2009; Reynolds, 2013; Saul, 2011; Hubert, 2012; Harrison et al., 2009; Bock, 2012; Cajas-Santana, 2014; Nicholls and Murdock, 2012; Howaldt and Schwarz, 2010; Mulgan, 2006; Davis, 2014; Lapiņa, 2012; Grigus and Lešinska, 2014; Avelino et al., 2014).

At the initial stage of the analysis the procedure of theory-based coding was performed by the authors, using the classification proposed by The Young Foundation (2012). The following categories and codes were used for coding:

1. Societal transformation (code ST)
2. A model of organizational management (code OM)
3. Social entrepreneurship (code SE)

4. The development of new products, services and programmes (code NP)
5. A model of governance, empowerment and capacity building (code GEC)

To assess inter-rater reliability when coding qualitative data (definitions), Cohen's Kappa coefficient (Cohen, 1960) was measured. The coefficient shows "the proportion of agreement corrected for chance". The algorithm of the calculation of the coefficient is described in details by Wood (2007). It easily can be calculated by means of SPSS software, as well as manually.

Following Landis and Koch (1977), the value of the coefficient over 0.7 was stated as a satisfactory level. The remaining definitions, which the raters did not agree on, were coded with two different codes, proposed by the authors. In the end, the coding procedure was done in AQUAD and frequency table was generated to determine the most frequently used category to define social innovation.

The further analysis of the definitions was performed by means of classical and interpretative content analysis, i.e., transformation of the textual information into the quantitative measures with further statistical processing. The software AQUAD 6.0 was used for quantitative processing of the data.

For initial data reduction the procedure of open-coding was used. Data blocks were coded with so-called "profile codes":

- For the 1st block "Definitions of social innovation, which are used by national and international political and economic authorities" – Def_gov
- For the 2nd block "Definitions of social innovation, which are used by NGOs, non-profit organizations and research institutions" – Def_NGO
- For the 3rd block "Definitions of social innovation, which are used by individual researchers" – Def_individuals

The quantification of codes yielded the frequency tables which provide the information about the frequency of appearance of the codes in the definitions analyzed.

Data processing was iterated three times resulted in three content blocks: 1) the features of social innovations, 2) the fields of implementation of social innovations, and 3) the outcomes (impact) of social innovations.

The results of the current study were used to construct the model of the concept of social innovations.

3 Research results

Analyzing the collected definitions of the term 'social innovation', proposed by different authors, it is obvious that social innovations most frequently defined as a response to social challenges. Besides, the process of the development and implementation of social innovations requires new forms of relationships between stakeholders or the new forms of collaboration can be created during the process. Frequently, social innovations are defined as new products and services, as well as new methods, models, techniques, etc.

The first stage of the analysis of the textual information, using pre-defined categories was performed by the authors independently. Each of the definitions of the term 'social innovation' was coded with the appropriate code (see chapter 2).

The only text segment, in which the categories were described, was not considered. Thus, the authors analyzed 50 definitions.

For measuring the agreement between the authors on categories assigned to the definitions, Cohen's Kappa coefficient was calculated in SPSS. First attempt yielded the coefficient's value equal to 0.324. Due to the unsatisfactory level of the agreement the content of the definitions was discussed by the raters and the coding procedure was iterated. Second attempt yielded the coefficient's value equal to 0.730. The definitions on which the raters did not reach a consensus were coded applying two different labels.

Using the set of identified categories, the procedure of the content analysis was performed by means of AQUAD software. Frequency table generated by AQUAD is presented in the Table 1.

Table 1 Content analysis of the definitions of the term “social innovation”: results of theory-based coding

Category (code)	Def_gov	Def_individuals	Def_NGO
GEC (Governance, Empowerment, Capacity building)	3	4	4
NP (New Products)	2	6	9
OM (Organizational Management)	0	1	0
SE (Social Entrepreneurship)	0	1	1
ST (Societal Transformation)	5	12	8

Source: authors' contribution

Obviously, social innovation is most frequently defined in the context of societal transformation and as a development of new products and services. The further analysis was aimed to detect core features and elements of social innovations. Initial data processing by means of AQUAD 6.0, using open-coding procedure, yielded 72 units of meaning. The importance of certain codes was evaluated, based on the frequency of mentioning of specific units of meaning in the text. Analyzing the received results, it is possible to define main features of social innovations and to elicit the core elements:

1. *Social goal*. Social innovations are developed to achieve a socially important goal. The range can vary from dealing with global issues such as climate change, society ageing or pollution, to meeting specific social need in a particular region.
2. *Change*. Social innovation always is related with small or large-scale transformations. It could be society transformation, change in public thinking, a new approach to running a business and etc.
3. *Crossdisciplinarity*. The process of the development and implementation of social innovations usually is complemented with the crossing of disciplinary boundaries.
4. *New social relationships and collaboration forms*. It could be a new form of stakeholders' interaction, an involvement of new partners or changes in the routine tasks performed by social actors.
5. *Improving the society's capacity to act*. Social innovations are not only solutions for social needs and societal problems, but also are drivers for the society's development. Social innovations enhance society's capacity to act, thus, driving the wave of new innovations.

The further analysis of the extracted text segments was performed to get the answers to the questions on: (1) the main fields for social innovations, and (2) the main outcomes of social innovations.

Performing the procedure of content analysis, attention was only paid to specific portions of information: fields for implementation of social innovations and forms of social impact provided by social innovations. Frequency tables generated by AQUAD are presented in the Table 2 and Table 3.

Table 2 Content analysis of the definitions of the term “social innovation”: implementation fields

Category (code)	Def_gov	Def_individuals	Def_NGO
Business	3	3	0
Culture	1	3	2
Economics	2	0	4
Education	1	0	2
Environment	1	0	5
Finance	1	1	1
Health	1	0	2
Labour market	3	0	1
Politics	1	3	0
Public policy	1	0	0
Public services	0	1	2
Regulations	0	4	1

Source: authors' contribution

The variety of fields for application the results of social innovations explains the fact that the concept of social innovation has been studied from different perspectives and different dimensions are specified. The most frequently social innovations are defined in regards to business transformation, cultural, economic and environmental issues.

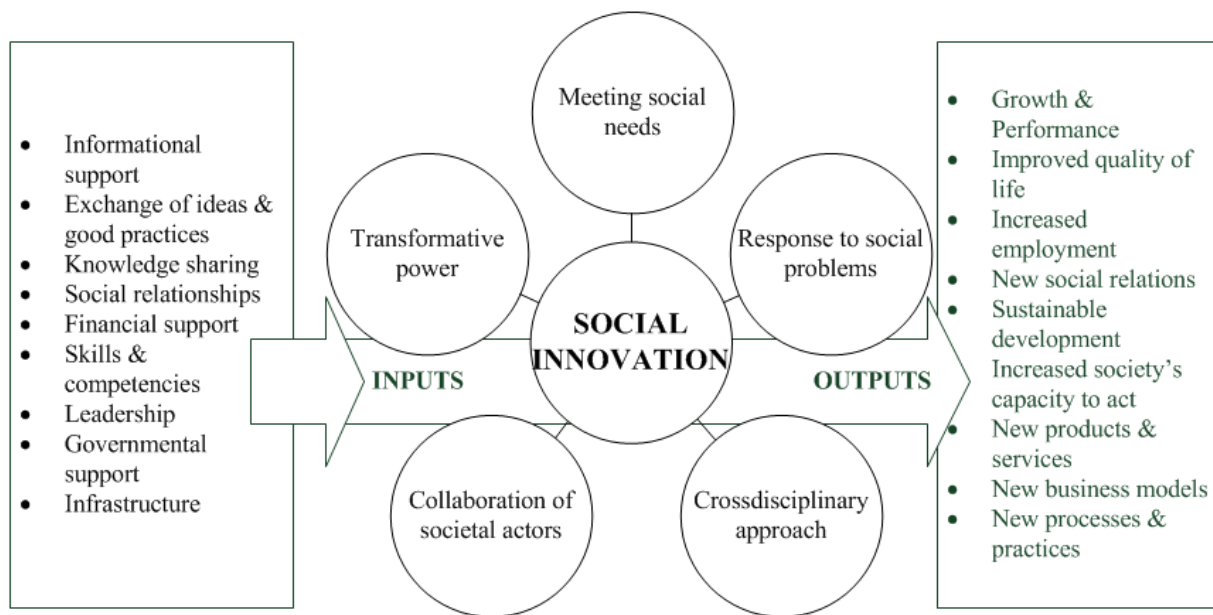
Table 3 Content analysis of the definitions of the term “social innovation”: implementation outcomes

Category (code)	Def_gov	Def_individuals	Def_NGO
Access to resources	0	1	2
Expand role of civil society	1	0	0
Growth & performance	1	2	1
Improve quality of life	3	2	0
Labour market integration	1	0	0
New business models	1	1	1
New jobs	3	0	0
New models of collaboration	2	0	1
New processes	0	1	0
New service delivery	0	2	1
New social relationships	3	3	5
New way of thinking	1	1	1
New way to do business	0	1	0
Response to social needs	5	6	9
Response to social problems	4	5	9
Social inclusion	0	1	0
Societal transformation	0	1	1
Society capacity to act	3	0	2
Sustainable development	2	0	4

Source: authors' contribution

Table 3 demonstrates that the most frequently social innovations are mentioned as a response to social needs and problems without specification of an outcome. In all three blocks of definitions social innovations are defined in regards to the new social relationships. On the one hand, the process of development and implementation of social innovations requires new ways of collaboration between stakeholders, but, on the other hand, new relationships between societal actors are generated. Besides, social innovation is frequently mentioned as a driver for sustainable development of business and society as well as a tool to enhance society's capacity to act.

Based on the presented results, the conceptual model of social innovation was created by the authors (Figure 1). The central block of the model and the block “Outputs” were built based on the current research results. In turn, the block “Inputs” was created, based on the brief literature review (TEPSIE, 2014; Hubert, 2010; European Commission, 2012a) on resources needed to develop and implement social innovations.



Source: authors' contribution

Figure 1 Conceptual model of social innovation

4 Discussion

Social innovation is a frequently debated topic in the academic and business environment. Its popularity is explained by the huge range of global challenges and social issues faced by the modern society that could be resolved by social innovation. Besides, social innovation is a driver of sustainable development for national economy and businesses. All the companies are affected by society's changing preferences and changing worldviews. All the businesses interested in achieving long-term prosperity should have sustainable development strategy that could be based on social innovations.

Considering extremely high importance of social innovations for almost all the sectors of economy and for society as a whole, it is not surprisingly that a wide range of definitions of the term 'social innovation' exists. Each of the reserachers concentrates the attention on specific elements of social innovation related to a particular field of implementation. Based on the results' of the authors' conducted research (content analysis with applying theory-based coding), the term 'social innovation' is most frequently defined in the context of social transformation, development of new products and services, and in regards to a model of governance, empowerment and capacity buiding. The aspect of business transformation is not very popular in the authors' selected definitions. Very few researchers define social innovation as a social entrepreneurship. It could be explained by the fact that social entrepreneurship is a separate comprehensive concept with its own definitions.

The current paper contributes to the body of theoretical knowledge in regards to social innovations, analysing the concept from different perspectives and combining different visions of the concept into one comprehensive model. It should be mentioned that more than 40 per cent of the analysed definitions were extracted from the sources published in 2012 and later. Thus, the present research provides up-to-date information about the meaning of the social innovations from the viepoint of different researchers and organisations.

Conclusion

The current paper reflects the results of the authors' conducted research on exploring the concept of social innovation and identifying its core elements and features. Research findings were used as abasis for construction of the conceptual model of social innovation (Figure 1) that includes three content blocks:

1. Inputs – sources and support needed to develop and implement social innovation.
2. Features – specific elements characterizing social innovation and peculiarities, which allow distinguishing social innovation from other type of innovation.
3. Outcomes – results from the implementation of social innovation; social impact provided by social innovation.

On the authors' opinion the most interesting component of the concept is the component related to the social relationships and collaboration between stakeholders in the process of development and implementation of social innovation. This component is included into the developed model twice: as an input and as an outcome. This could be a basis for in-deep investigations in various research fields.

Due to the fact that the given study was conducted within the framework of the scientific project, the proposed model has a practical value for the project participants. During the process of its development the common viewpoint on the meaning of the concept of social innovation was created. Besides, understanding the link between the components of the concept will assist in the process of the further investigation. The next comprehensive stage of the project is related to the measuring of social impact provided by social innovation. Thus, one of the important issues will be the determination of the appropriate measures. The developed conceptual model provides an insight into the potential research directions.

The current study was limited by the number of the analysed definitions of the concept of social innovations. However, the received results allow making a theoretical framework of the concept. The reliability of the developed model will be tested through the focus group interview. Latvian experts from different fields (education, business and etc.) will be invited to discuss pre-formulated questions on social innovations. It will allow defining the specifics and scale of social innovations in Latvia.

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Millennials and leadership development in a Canadian context

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Abstract

Purpose of the article Human resources are critical for organizations to gain a sustained competitive advantage by adapting to dynamic environmental realities. Effectively leading a diverse range of employees is therefore critical for sustained competitive advantage. As Baby Boomer leaders retire, it is increasingly important to prepare Millennial employees (born between 1978 and 1995) to move into leadership roles. This paper reports on a pilot study conducted to identify issues associated with Millennial leadership development in Canada.

Methodology/methods Survey requests were sent to 250 Millennial employees in Regina, Canada. Usable responses were received from 59 subjects. Responses were analyzed to identify major themes in work performance, leadership potential and leadership development for Millennial employees.

Scientific aim Anecdotal, the Millennial Generation has demonstrated different attitudes, values, etc. in the workplace compared to previous generations. While many articles have discussed these differences, empirical studies on Millennials have been sparse, and few of these studies have focused on leadership development. This research project aims to develop a conceptual framework of Millennials and leadership development. By examining Millennials in this context, this article provides important theoretical and practical implications.

Findings Initial results suggest two types of relationships important for the development of leaders within Millennial employees. First, involvement in coaching and mentoring relationships was correlated with higher levels of understanding of corporate objectives, increased levels of success in working with groups, and increased goal setting for groups. Second, identification with business leader role models was correlated with increased vision for the business, sense of direction for the company, acceptance of leadership responsibilities, group cooperation, and self-initiated professional development.

Conclusions The study identified factors which may be relevant for building leadership development frameworks for Millennial employees. This study is limited by the size of its non-randomized sample. It would also be strengthened through the use of semi-structured interviews with Millennials.

Keywords: Millennials, Leadership, Leadership Development

JEL Classification: M12, M14, J24

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Introduction

Human resources are critical for sustained competitive advantage in a dynamic, competitive environment, as is leading these human resources. The purpose of this pilot project was to help organizations in Canada to fill an emerging gap in organizational leadership. A common view among organizational leaders is that there is something different about the so-called Millennial generation that makes it uniquely difficult for members of this cohort to smoothly move into supervisory/managerial roles as the more senior leaders in organizations retire. This project was developed as a pilot study to assess factors that might be leveraged to address this perceived challenge (and perhaps challenge some of the perceived barriers to leadership development) and help Canadian organizations to develop leaders from this Millennial cohort.

The primary objective of this study is to correlate a number of predictive identifiers with leadership behavioural indicators. Certain predictive identifiers are expected to appear more often in Millennials who display behaviours that are characteristic of leadership. For the purpose of this study, it is assumed that the employer seeks candidates that display strong leadership tendencies or capabilities.

The secondary purpose of this study is to investigate the possibility that Millennials are less likely to display strong leadership characteristics as suggested in both the secondary research and the Morgan and Ribbens (2001) study. While this hypothesis is not the focus of the pilot study it is a consideration in the analysis of the survey results given the possibility of minimal leadership tendencies within the millennial cohort.

In the modern, knowledge-based economy, many organizations consider their employees to be their most valuable resource (Millmore, et al., 2007). In this context, human resources are critical for companies seeking a sustainable competitive advantage in a dynamic competitive environment. Companies need these human resources to focus on customers, think strategically, build strategic relationships, develop new capabilities over their careers, work collaboratively within diverse groups, work effectively in increasingly cross-cultural settings, communicate effectively, cope with change, and stay focused on results that contribute to customer value. Keeping this strategic focus requires effective leadership.

As Baby Boomers, those born between 1946 and 1961 (Cennamo, Gardner, 2008), retire in ever larger numbers it becomes increasingly important to prepare Millennial employees (also known as Generation Y, born between 1978 and 1995) to move into leadership roles (Deloitte, 2005; Raines, 2002). In Canada, there are approximately 6.9 million Millennials, a cohort 70 per cent of the size of the Baby Boom Generation (Earle, 2003). Together, these two groups make up almost half of the Canadian population.

However, existing research (e.g., Millmore et al, 2007), stories in the popular and business press (e.g., Hira, 2007; Klie, 2009), and anecdotal evidence about the Millennials suggests that many organizations continue to experience difficulty in attracting and retaining high caliber Millennial employees in general, and leaders in particular. According to Testa (2008), in 2006 the US Bureau of Labour Statistics indicated that 50% of employees ages 20 to 24 had been with their employer for less than one year with the number dropping to 10% at two years. Results in Canada are similar. According to a recent survey by Gallup, almost one in three millennials are disengaged from their current jobs or are ready to change employers (Middlemiss, 2015). Turnover is high, loyalty almost non-existent, and lack of engagement is a commonly identified explanation.

Millennials are often referred to as "...lazy, self-centred, pampered, self-obsessed, and lack professionalism (Kurec, 2007, p. E3)." They are "...a group of youngsters pegged as the most self-entitled, irresponsible and immature workers to date (Solomon, 2008)." Millennials are described as "...the highest-maintenance workforce in history...they want just-in-time opportunities; they want just-in-time training and recognition and reward (Kwon, 2007: 41)." "They have no work ethic...they are selfish... they express an entitlement attitude... they are loyal only to themselves and their profession, rather than any business...they expect the fruits of success to flow to them immediately...they don't stay (Atkinson, 2008: 3)." You get a sense of the frustration and lack of understanding.

Several authors in recent years have tried to explain the causes for these cohort traits ascribed to the Millennials. Often the proximate cause is ascribed to "helicopter" parenting (Klie, 2009): affluent parents who have readily provided for (and organized, coached, stimulated, and encouraged) whatever their children have demanded:

"The Millennials were raised, by and large, by active, involved parents who often interceded on their behalf. Protective Boomer and Xer parents tried to ensure their children would grow up safely and be treated well. Parents challenged poor grades, negotiated with the soccer coach, visited college campuses with their charges, and even went along to Army recruiting centers" (Raines, 2002: 3).

According to Meyers, "Boomers adopted a more inclusive style of parenting, with a focus on building self-esteem in an effort not to raise their kids the same way they'd been raised.... Moms and dads rarely said "no" and... even at school, there were no winners and losers; every child received a participatory ribbon and graduated in June" (Lowe, Levitt and Wilson, 2008, p. 46).

The perceived result of this phenomenon in the workplace is two-fold. First, Millennials have not learned about struggle or sacrifice (Hira, 2007), leading them to expect that work should come easy. Their perceived lack of loyalty to their employers (Atkinson, 2008) has led to the conclusion that they lack perseverance, “the ability to deal with responsibility, accountability and setbacks (Hollon, 2008, p. 42).”

Second, it is difficult to take the lead in decision-making when someone else has made decisions for you your entire life (Hira, 2007). This view is supported by past research: Compared to respondents from previous generations, Millennials reported themselves as being least like the following traits considered to be important for leadership: ambitious, confident, cooperative, and dedicated (Morgan, Ribbens, 2001).

From this result, it appears that Millennials are ill-prepared to take on the leadership roles currently being opened as Baby Boomers vacate their senior positions. This would suggest that employers will need to actively work to develop leaders from this cohort, rather than just looking to select a sufficient number of leaders who are emerging from this cohort.

A further consideration is the possibility that Millennials do not possess primary leadership characteristics and tendencies as suggested in both the secondary research and the Morgan and Ribbens (2009) study. Millennials prefer to follow rather than lead. And while followers are important for the success of any organization, followers still need direction and leadership. The Millennials are our future leaders; they will be in the workplace for the next forty years.

If true, and given the importance of leadership in all organizations, this premise could have significant implications. If leadership is deficient within the millennial cohort, a leadership development strategy needs to become the immediate focus for Canadian employers. In the next sections of the paper we will briefly develop an overview of key leadership roles and/or characteristics that need to be developed in or elicited from Millennial employees to prepare them to take on leadership in Canadian companies. We will then discuss important considerations for the development of Millennial employees.

1 Literature Review

1.1 Organizational Leadership

In his book *The Speed of Trust*, Covey defines leadership as a process of “getting results in a way that inspires trust... to release the creativity and capacity of individuals to give their best and to create a high-trust environment in which they can effectively work with others (2006, p. 298).” To gain this trust, leaders need to challenge work processes (Kouzes, Posner, 2002), inspire a shared vision, clear sense of purpose, or dreams that others want to share (Daniels, Daniels, 2007; Harkins, Swift, 2009; Kouzes, Posner, 2002), collaborate and enable others to act (Henein, Morissette, 2007; Kouzes, Posner, 2002), focus on leadership and model desired behavior (Daniels, Daniels, 2007; Henein, Morissette, 2007; Kouzes, Posner, 2002),

The constant message in each theorist’s definition of leadership is the importance of serving and meeting the needs of the followers their organization.

“Leadership is like a chain whose ultimate purpose is service. The person who accepts the role must ascribe their whole being to serve it. Through the process of seeing a desired future, believing in it passionately and taking action, leaders and followers create a new reality and reinvent themselves” (Daniels, Daniels, 2007: 21).

Building on these concepts, Scotiabank’s Leader Profile identifies leadership characteristics that describe the ideal Scotiabank leader. This profile includes the behaviours that all leaders must demonstrate, the values that all employees must model, and for those aspiring to the most senior executive levels, some of the leadership experiences that would be beneficial. This profile is the foundation of Scotiabank’s Leadership Resource Management approach, and is based in four key factors: Team Leadership, Strategic Vision, Modeling, and Acceptance of a Leadership Role (Scotiabank, 2010).

1.2 Leadership Development

The implicit socialization of the Millennial generation suggests that Millennial employee leadership development strategies need to be built around three premises. The first is to recognize and understand that Millennials grew up in a highly structured environment under the close supervision and guidance of their parents. These employees may, therefore, be both more comfortable with and dependent upon advice from parental figures. In the workplace this drives the need for coaching and mentoring, and also drives a continual need for guidance and direction both in terms of work tasks and career progression. Many Millennials “come into the workplace expecting employers to give clear, concise directions and to have a detailed career plan complete with a timeline for raises and advancement (Zemke, 2001, p. 45).” What is more important, however, is to recognize that Millennials often need assistance in self-managing (and understanding) their own expectations (Galagan, 2006, p. 26). This self-management is also an integral component of effective leadership (Daniels, Daniels, 2007).

The second premise is to recognize that it is important for managers to help Millennials define their career goals and understand the best way to achieve those goals. An ongoing training and development culture (a learning environment) is critical; the organization must make a long-term commitment to this culture. Millennials want three types of learning: formal, incidental, and action learning (Lowe, Levitt, Wilson, 2008).

The third premise relates to leadership. As noted earlier, many Millennials have grown up in structured environments such that what they do is decided for them by their parents, teachers, and advisor/coaches. Many Millennials have not developed leadership skills as there was no need: it is difficult to take the lead in decision-making when someone else has made decisions for you your entire life (Hira, 2007). This points to the importance of incorporating leadership skill development into career plans and employee development activities.

2 Research methodology

2.1 Research Question

Based on the previous discussion about the Millennial generation, leadership, and Millennial and leadership development, the following research question was posed: What developmental experiences lead to the expression of desired leadership characteristics in Millennial employees? More specifically, does the presence of a business role model, the use of a mentor/coach, early or pre-career leadership training, or early career leadership assignment lead to the expression of a strategic vision, team leadership, or modeling leadership behaviors, or the willingness to take on leadership tasks/assignments?

2.2 Research instrument

Dependent Variables. From the list of characteristics developed by Scotiabank, we chose four areas of demonstrated leadership to be measured in this project: Team Leadership Characteristics, Strategic Vision, Modeling, and Acceptance of a Leadership Role. Each of these dependent variables was formed by averaging the scores to questions within each area. Six questions in the survey measured Team Leadership Characteristics. Three questions in the survey measured modeling. Five questions in the survey measured Strategic Vision. One question measured Acceptance of a Leadership Role.

The independent variables were made up of four questions pertaining to leadership development. The first variable pertained to the employee's access to/use of a Mentor/Coach. The second variable pertained to the presence of a Business Role Model for the employee. The third variable pertained to early career leadership training. The fourth variable pertained to early career supervisor. Survey participants were also asked to complete nine demographic questions.

2.3 Research subjects

SurveyMonkey was utilized for delivery of the study and collection of the data. The survey was released in three batches over a ten day period. This pilot research study was originally built for delivery within Scotiabank. However, the pool for this project was expanded beyond Scotiabank, to a convenience sample of 250 individuals identified as Millennials at Scotiabank, Sasktel, Farm Credit Canada, and the United Way in Regina, Saskatchewan, Canada.

Sixty-eight responses were received of which sixty-one contain complete responses and form the basis of analysis (approximately 24.4% of potential responses). The favourable response rate is believed to be a reflection of the encouragement provided to potential respondents by senior managers at each employer. 8% (7) of the respondents were Scotiabank employees.

76.3% of the respondents were aged 27 to 32 while 20.3% were aged 24 to 26. We did not expect to see employees aged 15 to 21 given that most of the individuals in this lower age group were completing their education. The results are based on a more representative sample of employees in the Millennial Cohort than those in the Morgan and Ribbens study, wherein the Millennials surveyed were university students. The respondents were 47.5% female and 52.5% male.

The sample was representative of career-focused Millennials given that the vast majority of those surveyed were full-time employees with considerable tenure with their respective employer (64.4% had 2-10 years with their current employer, suggesting that employee turnover of this cohort is less than suggested in secondary research). The sample group was well-educated with 74.6% holding an undergraduate degree (39 respondents) or master's degree (5 respondents).

3 Findings

Descriptive statistics and correlations are presented in Table 1. In Tables 2, 3, 4 and 5 we present the analysis of the effect of Consulting with a Mentor/Coach, Having a Business Leader Role Model, Receiving Early-career Leadership Training, and Early-career Supervisory Experience on the four leadership factors, Providing Team Leadership, Modelling Desired Performance, Accepting Leadership Responsibility, and Providing Strategic Vision. From this correlation analysis it can be seen that having a Business Leader Role Model is significantly correlated with all four leadership factors studied.

Next we analyzed the effects of each of the leadership development factors on the expressed leadership characteristics and behaviors. While Consulting a Mentor/Coach was not significantly correlated with any of the leadership factors, there were significant differences between the mean scores on each of the management factors for those who consulted a mentor/coach and those who did not (see Table 2).

Table 1 An Descriptive statistics and nonparametric correlations

	Team Leadership	Modeling	Accept Leader- ship Responsibility	Strategic Vision	Consult Men- tor/Coach	Have Business Role Model	Received Early Leadership Tng	Early Career Su- pervisor
Mean	5.8	5.9	5.6	5.2	0.19	0.67	0.19	0.34
Std. deviation	1.40	0.93	1.31	1.11	0.38	0.46	0.39	0.47
Team Leadership	1.00							
Modeling	.713**	1.00						
Accept Leader Responsibility	.449**	.518**	1.00					
Strategic Vision	.662**	.653**	.501**	1.00				
Consult Mentor/Coach	.186	.177	0.039	0.18	1.00			
Have Business Role Model	.413**	.385**	.451**	0.4**	.16	1.00		
Early Leadership Tng	-.083	-.092	-.08	.028	.248 $\overline{\text{T}}$	-.160	1.00	
Early Career Supervisor	-.057	.024	.191	-.026	-.104	.103	-.039	1.00
N = 61	* p<.05							
$\overline{\text{T}}$ p<.10	** p<.01							

Source: own work

For those who consulted a mentor/coach, the average score on Expressed Team Leadership was 6.3, while the average score for those who did not was 5.8 ($p<.10$). The average scores for Expressed Modelling of desired performance were 6.3 and 5.9 respectively ($p<.10$), and for Expressed Strategic Vision they were 5.8 and 5.2, respectively ($p<.05$). The effect size may have been affected by the small proportion of respondents who did have a mentor/coach relationship, with only ten respondents reporting that they had this type of relationship.

Table 2 I consult a mentor / coach (1=yes; 0=no)

		N	Mean	Std. Deviation	t	df	Sig. (2-tailed)
Expressed Team Leadership	1	10	6.3	0.42	1.947	53	0.057
	0	45	5.8	0.87			
Expressed Modeling	1	10	6.3	0.39	1.856	53	0.069
	0	45	5.9	0.65			
Lead a) I readily accept leader- ship responsibilities.	1	10	5.9	1.29	0.742	53	0.462
	0	45	5.6	1.23			
Expressed Strategic Vision	1	10	5.8	0.75	2.051	53	0.045
	0	45	5.2	0.97			

Source: own work

Nearly twice as many respondents (nineteen) reported having a Business Leader Role Model. Identification with a Business Leader Role Model was significantly correlated with all of the leadership factors. In addition, the mean scores on all four leadership factors were significantly higher for respondents who identified with a Business Leader Role Model than for those who did not (see Table 3). For those who identified with a Business Leader Role Model, the average score on Expressed Team Leadership was 6.1, while the average score for those who did not was 5.4 ($p<.001$).

The average scores for Expressed Modelling of desired performance were 6.2 and 5.7 respectively ($p < .01$), for Readily Accepting Leadership 6.0 and 4.9, ($p < .01$), respectively, and for Expressed Strategic Vision they were 5.6 and 4.7, respectively ($p < .05$).

Table 3 I have at least one business leader role model (1=yes; 0=no)

		N	Mean	Std. Deviation	t	df	Sig. (2-tailed)
Expressed Team Leadership	1	39	6.1	0.52	3.718	56	0.000
	0	19	5.4	1.07			
Expressed Modeling	1	39	6.2	0.50	3.15	56	0.003
	0	19	5.7	0.72			
Lead a) I readily accept leadership responsibilities.	1	39	6.0	1.00	3.591	56	0.001
	0	19	4.9	1.29			
Expressed Strategic Vision	1	39	5.6	0.81	3.481	56	0.001
	0	19	4.7	1.00			

Source: own work

There were no significant differences in the means for the four leadership factors for respondents who had received early-career leadership training or who had had early-career supervisory responsibilities (see Table 4 and Table 5).

Table 4 I received early leadership training (1=yes; 0=no)

		N	Mean	Std. Deviation	t	df	Sig. (2-tailed)
Expressed Team Leadership	1	11	5.9	0.57	0.161	56	0.872
	0	47	5.9	0.87			
Expressed Modeling	1	11	6.0	0.54	-0.168	56	0.867
	0	47	6.0	0.65			
Lead a) I readily accept leadership responsibilities.	1	11	5.6	1.03	-0.005	56	0.996
	0	47	5.6	1.26			
Expressed Strategic Vision	1	11	5.5	0.90	0.684	56	0.497
	0	47	5.2	0.98			

Source: own work

Table 5 I supervised one or more individuals (HS or PSE) (1=yes; 0=no)

		N	Mean	Std. Deviation	t	df	Sig. (2-tailed)
Expressed Team Leadership	1	20	5.9	0.71	0.106	57	0.916
	0	39	5.9	0.90			
Expressed Modeling	1	20	6.0	0.68	0.143	57	0.887
	0	39	6.0	0.61			
Lead a) I readily accept leadership responsibilities.	1	20	5.9	1.19	1.414	57	0.163
	0	39	5.5	1.19			
Expressed Strategic Vision	1	20	5.2	1.07	-0.209	57	0.835
	0	39	5.3	0.94			

Source: own work

4 Discussion and Conclusion

4.1 Mentor/Coach Influence

Much of the literature on Millennials suggests that access to mentors and coaches in the workplace is very important to Millennials. However, the results of this study indicate that only 17% of the Millennials in this sample consult this source of influence. Unfortunately, the quantitative data in the survey do not indicate whether the respondents who consulted mentors/coaches were formally assigned to these relationships by their employers, “adopted” by an interested senior colleague, or had personally sought out these relationships.

The results do indicate, though, that there is a significant relationship between consulting with a mentor/coach and engaging in desired leadership behavior. The Millennials that do consult a mentor or coach indicate that they understand the vision, strategy and objectives of the company to a greater extent than their non-mentored peers. This group of Millennials also indicated that they have a stronger vision and direction in their own lives. In addition, they model desired work standards. Based on their responses, these individuals tend to demonstrate a positive attitude even in difficult and challenging times. They also indicate a higher level of working for and well with members of a group while setting high goals for that work group, consistent with their sense of vision for the company and their role within it. It stands to reason that these same individuals ask for and act on the insight and input provided by others.

4.2 Role Models

Similar to mentors, existing literature on Millennials suggests that role models are a significant role in their lives. Consistent with this, sixty-six per cent of the respondents indicated that they can identify a business leader role model whom they attempt to imitate. Relative to Millennials in the sample who do not have leadership role models, this group has more vision and direction. They also more readily accept leadership responsibilities, set high goals for group accomplishment while remaining cooperative with the group, and initiate self-development.

These Millennials have a relatively greater tendency to encourage cooperation within a group, do everything possible to meet deadlines, and have a positive attitude in difficult situations. They work hard to continually improve and will set an example of others in fashion similar to the role models they identify themselves with.

These same Millennials expressed having a clearer understanding of the future state of the organization for which they and will focus on achieving those objectives. At the same time these individuals expressed being more able to deal well with ambiguity and take risks having the self-discipline to do what needs to be done and to do it consistently.

4.3 Early Leadership Training

A small percentage of the Millennials in this study received early-career leadership training with the Canadian military, Cadets or similar organizations. There were no difference in the leadership factors between this sample and those who had not received this kind of early-career leadership training. Again, the lack of qualitative data makes it difficult to interpret this result. It could be that it is difficult for employees at this age and stage in their careers to generalize training from a military to a civilian work environment.

4.4 Early Leadership Assignments

Roughly one third of the Millennials surveyed worked in a supervisory capacity when working during school years. While the mean score for willingness to accept leadership responsibilities was higher for Millennials in the sample with prior management experience (5.9 versus 5.4) the difference was not statistically significant.

4.5 Millennial Leadership Development

This study looked at four factors that could be important in developing leadership within the cohort of Millennial employees in Canada: Mentor/Coach Influence, the presence of a Business Leader Role Model, Early-career Leadership Training, and Early-career Leadership Assignments. Two of these factors, actively developing Mentor/Coach relationships and encouraging business leaders within organizations to more intentionally take on the persona of Role Models, look promising as elements of leadership development for Canadian Millennial employees. This suggests that future leadership into leadership development of Millennial employees should focus on getting a better understanding of the elements of these development factors.

While these findings are promising, it is not clear what or who the Millennial employees are looking to for models of desirable leadership behavior. It is also not clear whether the finding that having a mentor/coach to consult is a result of the consulting process or is a function of those who exhibit leadership characteristics being the ones who pursue coaching/mentoring relationships. This is in part a function of the convenience sample used for this research project. It is also a function of the Scotiabank survey used.

Future research should use a random sample across more organizations from the population. The survey questions should be refined to identify more details about the nature of mentor/coach relationships, who initiated them, how structured they are, etc. They should also refine the questions regarding the key elements of Business Role Models and how organizations can use them in a developmental process.

Regarding the factors of Leadership Training and early Leadership Experience, it might be more fruitful to explore the experiences of Millennial employees in their current work situations, rather than looking back to high school or university experiences. It might be particularly useful to look at the use of role models and mentors in supporting formal leadership training programs and initial supervisory assignments.

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Innovation and Size of the Company: An Exploratory Study

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Abstract

Purpose of the article The purpose of this paper is to present and discuss knowledge and findings of original primary research into Czech innovative manufacturing companies within three consecutive research projects of Internal Grant Agency Faculty of Business and Management Brno University of Technology, which were conducted from 2009 till 2011. Then, more detailed and complex in-depth research project followed with support from Czech Scientific Foundation in 2013-2015.

Methodology/methods For this analysis a questionnaire surveys were used since it is time and cost-efficient and allows carrying out a statistical analysis. In addition, the replication of questions is possible and thus consents a comparison of results and pattern analysis. The questionnaires were web-based so as to facilitate access to a large number of respondents. Considering Czech manufacturing industry, level of measurement, and examining issue, the following research hypothesis was defined: Innovations are mainly performed by medium and large companies in Czech business environment who have sufficiency of resources.

Scientific aim Questions from the first part of the questionnaire were related to the basic characteristic data of the company, such as the company's size, origin, market, etc. This paper is focused on company size, which is traditional contingency factor in economic research. Specifically, this paper studies the impact of two elements linked to company size: number of employees and turnover. Distribution of companies by size is based on EU law and the Recommendation of the European Commission 2003/361/EC of 6 May 2003 in this paper. Innovation is understood in line with the Oslo Manual.

Findings The first empirical evidence of the survey emerged by way of descriptive statistics. We noted through the analysis of questionnaires that the results of research surveys carried out between 2009 and 2015 contradiction each other. In 2009 the results suggested that innovations are mostly performed by medium enterprises followed by large enterprises with small and micro companies at the tail. On contrary, in 2010 and 2011 the most innovative of the polled companies were micro and small enterprises followed by medium enterprises with large companies being the last. In 2013-2015 we can state that innovations are mostly performed by SMEs, as well. Moreover, these results contrast with studies of the Czech Statistical Office and OECD that consider large companies as innovation leaders in the Czech Republic and EU.

Conclusions It is very difficult to confirm or invalidate research hypothesis based on these controversial results. What is the most important from managerial point of view is the finding that companies perform innovation. However, they differ in form of innovation.

Keywords: innovation, innovative potential, size of company, primary research, manufacturing industry, Czech Republic.

JEL Classification: M21, O32, P47

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Introduction

Nowadays, successful companies reach or maintain their success by continuous changes in the industry where they compete with the help of systemic innovation. Their competitive success comes from “running differently”, by reinventing themselves through innovation capability (Fiorentino, 2010).

Innovative capability is currently considered the key condition of companies’ competitiveness (Andergassen et al., 2009) and performance. This relates particularly to small and medium-sized enterprises (SMEs), which, thanks to their less structured organizational and administrative systems, are able to react more quickly to customers’ requirements and trends in development (Audretsch, 2003; Zeng et al., 2010).

Kearney (Diedrichs et al, 2006) found in their study that in smaller companies key success factors usually depend on the potential of the people, the informal culture, and the start-up enthusiasm and strong leadership of the owner/manager. In bigger companies success factors are also linked to the organisational structure, information and decision processes, and responsibilities.

In younger companies, innovation is mostly related to the realisation of an existing idea. Here the success factors mainly focus on establishing basic business processes. Innovation management in mature businesses is often connected to product, service or process improvements, or to the development of new business models. In these cases, the success factors mainly depend on strengthening managerial skills, change management and improvement of organisational knowledge.

Does size of company influence innovation activities? This was the sub-aim of the own research. The objective of this paper is to present the contemporary situation of innovation management control as it is implemented in current Czech business environment. The research framework is based on primary research carried out in Czech innovative manufacturing companies under the auspices of the Faculty of Business and Management Brno University of Technology with financial support from Czech Science Foundation research project No. 13-20123P.

After a short introduction, the crucial term – innovation – is defined. Then the methods and process of research surveys are presented along with their results, followed by a discussion on the contemporary situation.

1 Definition

The term innovation is subject to countless classifications, typologies and categorisations in professional literature (Žižlavský, 2014). In the broadest sense of the term, innovation is understood as a human-proposed, targeted change relating to products (putting new or significantly improved products into production and placing them on the market), production methods (processes), the organisation of work and production (new organisational solutions of structural importance), and management methods used for the first time at least, as a minimum, by the firm in question. Thus, according to some definitions, the main characteristics of innovations are change and considerable novelty (Hauschildt, 2007; Kotler, Trias de Bes, 2003; Littkemann Holtrup, 2008; Porter, 1990; Rogers, 2003; Schumpeter, 1912; Valenta, 1969; Witfield, 1975). The novelty element can also be found in the OECD and European Commission definitions of innovations which are currently considered essential (for example, EC, 1995; Gault, 2013; OECD 2002; OECD, 2005).

The most commonly used substantive typology of innovation terms is the classification under the Oslo Manual prepared by experts in the field of measurement and evaluation of innovation activities from OECD member states. According to the more recent, broader approach of the Oslo Manual, four main types of innovation are recognised (OECD, 2005):

- Product innovations involve significant changes in the capabilities of goods or services. Both entirely new goods and services and significant improvements to existing products are included.
- Process innovations represent significant changes in production and delivery methods.
- Organisational innovations refer to the implementation of new organisational methods. These can be changes in business practices, in workplace organisation or in the firm’s external relations.
- Marketing innovations involve the implementation of new marketing methods. These can include changes in product design and packaging, in product promotion and placement, and in methods for pricing goods and services.

Although, there exist more publications about innovation classification, the Oslo Manual is the foremost international source of guidelines for the collection and use of data on innovation activities in industry (Gault, 2013). Therefore, definition of innovation proceeds from the Oslo Manual in this paper.

Under the Oslo Manual (OECD, 2005), innovative company is one that has implemented a new or significantly improved product or process, or a combination of them, during the period under review. The type of activity applied by companies in the creation of innovations is one of the basic characteristics of innovative companies.

2 Research design (methodology)

With regard to the identified objective of research projects – learn and study the current state of issues of the management of innovative activities as these areas are currently being solved in Czech, as well as foreign expert literature and practice in Czech companies – and the method of their fulfilment, when processing the research, the system approach and the following scientific work methods were utilized.

Research projects work relies mainly on the systemic approach, which was applied for its ability to consider situation in the context of external and internal circumstances. It employs a combination of different methods and techniques from various scientific disciplines (see below).

- Analysis is used as a method of acquiring new knowledge and its interpretation. When processing secondary data, the method of secondary analysis was utilised. A source of secondary data was the professional literature, especially foreign – books, journals, articles from scientific and professional databases (Web of Science, Scopus, Emerald, EBSCO, etc.), with respect to their professional level and relevance.
- Questionnaire: In order to ascertain the real situation in innovation performance measurement in Czech companies, a questionnaire survey was conducted in Czech manufacturing companies. At that stage, we strived to contact as many companies as possible to obtain a sufficient amount of data.
- A scaling method based on the principle of quantifying qualitative data was used in this research. The reason for this usage is that managers' responses involve subjective statements, which must be subsequently converted using a verbally, numerically or graphically expressed scale. Specifically the Likert scale method was used. Likert scales are used to indicate the degree (level) of agreement or disagreement with the specified statements, on which it is subsequently possible to deduce the attitudes and opinions of respondents (Rod, 2012).
- Synthesis is used especially when results are announced.
- Induction (generalization) was utilised especially when generalizing all the findings achieved in the questionnaire inquiry. Verification of found dependencies was verified by application of deduction.
- Feedback method allowed a reconsideration of every step in research to make sure the research does not deviate from its original goal and its starting points.

As concerns the methodological approach, following recent examples (Baird et al., 2004; Carenzo, Turolla, 2010; CZSO, 2010; CZSO, 2012; CZSO, 2014; OECD, 2009; Sulaiman, Mitchell, 2005), a questionnaire-based survey was implemented to gather information and determine the real state of solved issues of management of innovation activities. The survey method is often used to collect systematic data since it is time and cost-efficient and allows carrying out a statistical analysis (Groves et al., 2009). In addition, the replication of questions is possible and thus consents a comparison of results and pattern analysis.

The first step was to define the research sample. Before the research commenced, the circle of respondents was duly considered. Research could have been limited based on a company's size, the field, and distribution of companies in the Czech Republic. After careful consideration, it was decided to carry out the research via a random selection of various-sized innovative companies from manufacturing industry in the Czech Republic.

As far as the first feature is concerned, this choice is related to the fact that managerial tools primary originated, and were subsequently developed, in manufacturing companies. The second feature was the fact that manufacturing industry (according to CZ-NACE rev. 2, division C, section 10-33) is considered as the most significant industry for development of the Czech economics since it is the largest sector of the Czech economy. This allows sufficient number of companies to be contacted to participate in the study. We estimate that the target population consists over 11,000 manufacturing companies.

The key was to approach as many respondents as possible and so to acquire a sufficiently large data scale factor for evaluation of primary research. The inquiry itself provided quantitative, as well as semi-qualitative data on the current state of the issue in question. Simplicity and the relative brevity of the questionnaire, affecting a respondent's willingness to fill it out, was an important factor when creating the questionnaire. There were the following types of questions:

- With selectable answers and the option to select just one.
- With selectable answers and the option to select several answers.
- With pre-defined answers with an evaluation scale.
- Some questions had the option to fill in answers freely.

In order to establish innovation success, it is first necessary to decide at what level the process will take place. Innovation effects can be measured at i) a macro level (distinguishing national and sector levels), ii) semi-micro level (the level of the firm's product family), and iii) micro level (the level of innovation projects).

At the macro level, there is a wide range of known and sophisticated means of measuring innovation potential and performance such as, in Europe, the Innovation Union Scoreboard (EC, 2014a) and the Regional Innovation Scoreboard (EC, 2014b); in the Czech Republic, innovation surveys are regularly performed by the Czech Statistical Office, as well as the Centre of Economic Studies at the University of Economics and Management (CES, 2013). The macro level has been the subject of abundant research and studies in the past decades (e.g. Archibugi, Pianta, 1994; Brusoni et al., 2006; Casper, van Waarden, 2005; Cefis, Ciccarelli, 2005; Gourlay, Seaton, 2004; Malerba, Orsenigo, 1999; MEADOW, 2010; OECD 2007; OECD 2010a; OECD 2010b; Patel, Pavitt, 1994); therefore, the present thesis does not study this level and bases its considerations on the findings of the aforementioned studies.

Innovation is considered one of the main drivers of productivity growth and economists have investigated both its determinants and its contribution to company performance, measured as productivity; growth and/or market value. There are several reasons for analysing the link between innovation and productivity at the firm micro-level. First, it is companies that innovate, not countries or industries. Second, aggregate analysis hides a lot of heterogeneity. Companies' performance and characteristics differ both across countries and within industries; countries' innovation systems are characterised by mixed patterns of innovation strategies which have an impact on companies' behaviour; and companies may adopt multiple paths to innovation, including non-technological ones. The advantage of micro-level analysis is that it attempts to model the channels through which specific companies' knowledge assets or specific knowledge channels can have an impact on these companies' productivity and therefore shed light on the role that innovation inputs, outputs and policies play in economic performance (OECD, 2009).

Considering Czech manufacturing industry, level of measurement, and examining issue, the following research hypothesis was defined: ***Innovations are mainly performed by medium and large companies in Czech business environment who have sufficiency of resources.***

Companies for surveys were selected from the databases Technological Profile of the Czech Republic, Kompas and European database Amadeus. The real return rates can be considered as very good because return rates of mail-back questionnaires are usually less than 10%. The detailed statistics of the questionnaire inquiries are shown in Table 1.

Table 1 Overall statistics of the questionnaire surveys

	Research 2009	Research 2010	Research 2011	Research 2013-2015
Basic sample	Manufacturing enterprises in the Czech Republic			
Selective sample	Innovative manufacturing enterprises in the Czech Republic			
Number of addressed companies	250	800	650	2,877
By e-mail	230	750	650	2,807
By personal visit	30	50	0	70
Number of undelivered e-mails	13	35	27	98
Number of partially filled questionnaires	4	9	13	153
Number of completely filled questionnaires	53	139	212	354
Real return	21.2%	17.4%	34.1%	12.30%

Source: Own research projects

It is important to note that reminders were made for non-responding companies, and in many cases, the respondents answered that they would not fill the questionnaire, due to bad experiences from analogous surveys, the lack of time or the existence of internal policies related to nonparticipation in academic research. This could evidence the difficulties created by this kind of research and that innovation is a strategic issue for those companies.

Within three consecutive research projects carried out from 2009 till 2011 under the sponsorship of the Internal Grant Agency of the Faculty of Business and Management Brno University of Technology, various approaches to management of the innovation process were examined. A total of 53, mostly production, companies participated in the first project called Research into the level of development of innovation potential, creation, and evaluation of the innovation strategy of medium-sized and large machine-industry companies in the Czech Republic (Reg. No. AD 179001M5). This project uncovered several unfavourable findings on the state of management of innovative activities (Žižlavský, 2010). Therefore, this area was examined in detail in the second and third related research projects called Development of knowledge for improvement of information support of the economic management of company development, in accordance with devel-

opment of the business environment (Reg. No. FP-S-10-17) undertaken in 2010 and Development of knowledge for improvement of information support of the economic management of a company (Reg. No. FP-S-11-1) in 2011. These projects have become bases for in-depth research within postdoc project of Czech Science Foundation No. 13-20123P

3 Research results

Company size is traditional contingency factor in economic research. Specifically, this paper studies the impact of two elements linked to company size: number of employees and turnover. In fact, this factor is usually the basis of company classification. Distribution of companies by size is based on EU law and the Recommendation of the European Commission 2003/361/EC of 6 May 2003 (EC, 2003, p. 36). This standard divides four groups: micro, small, medium and large company. Table 2 shows the percentages obtained from using the number of employees and turnover indicators.

Table 2 Distribution of companies engaged in research surveys

Category/year	Employees			
	Research 2009 n=53	Research 2010 n=139	Research 2011 n=212	Research 2013-2015 n=354
Micro	16%	43%	24%	7%
Small	9%	32%	36%	29%
Medium-sized	45%	13%	24%	46%
Large	30%	12%	16%	18%
	Turnover			
	Research 2009 n=53	Research 2010 n=139	Research 2011 n=212	Research 2013-2015 n=354
Micro	15%	67%	44%	21%
Small	26%	15%	24%	23%
Medium-sized	38%	11%	17%	41%
Large	21%	7%	11%	15%

Source: Own research

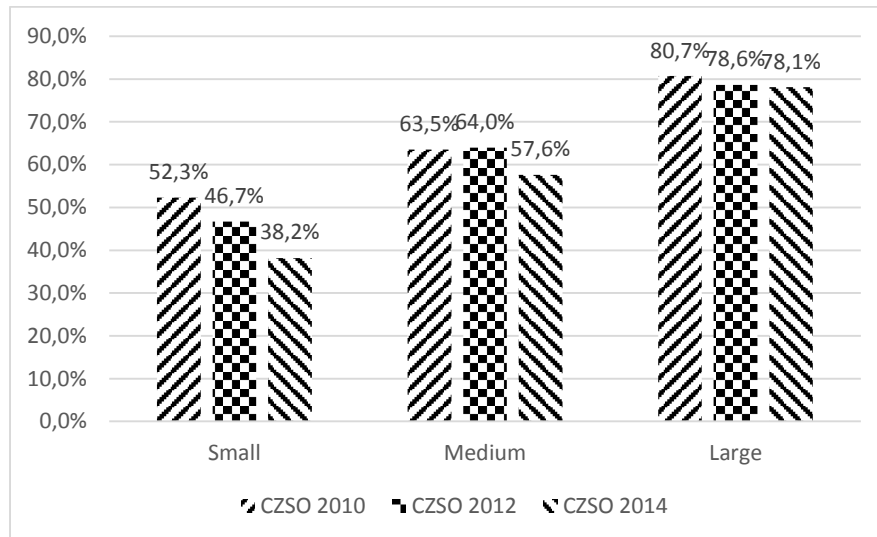
The first empirical evidence of the survey emerged by way of descriptive statistics. We noted through the analysis of questionnaires that the results of research surveys carried out between 2009 and 2015 contradiction each other. In 2009 the results suggested that innovations are mostly performed by medium enterprises (45% of respondents) followed by large enterprises (30% of respondents) with small and micro companies at the tail. This confirms the Hypothesis 1 that innovative activities are pursued predominantly by medium and large enterprises that have sufficient resources.

Contrary, in 2010 the most innovative of the polled companies were micro and small enterprises (75% respondents in total) followed by medium enterprises (13% of respondents) with large companies being the last (12% of respondents). The factor that may be behind this result is the economical crisis of that period. It can be assumed that companies were aware of the threat of losing their competitiveness that could potentially lead to their end. While medium and large enterprises focused on operational efficiency and cost saving, small companies could react to changes in the environment through innovation. The bigger the company the more organisationally demanding are any innovative changes, which is why mainly smaller businesses with flexible organisational structure innovate in these times. Large companies naturally strive to support innovation as well but due to more complicated organisation, these activities may manifest themselves later. The importance of small and medium enterprises for the development of Czech economics is therefore increasing. This is highlighted also by the Concept for Support of Small and Medium Entrepreneurs for the period of 2014-2020 carried out by the Ministry of Industry and Trade of the Czech Republic (for more information see Ministry of Industry and Trade of the Czech Republic, 2012).

Thus, for better understanding the same area has been examined in 2013-2015 research. Based on these data we can state that innovations are mostly performed by SMEs (82% in total), resp. by medium enterprises (46% of respondents) followed by small enterprises (29% of respondents), large (18% of respondents) and micro companies (7% of respondents).

However, these results contrast with studies of the Czech Statistical Office (CZSO, 2010, 2012, 2014) that consider large companies as innovation leaders in the Czech Republic (see Figure 1). On the one hand, given a certain level of innovations inputs, larger companies might have higher innovative sale intensity because they can appropriate innovation benefits more easily than SMEs and/or because of economies of scale. However, SMEs might use innovation inputs more

efficiently because of entrepreneurial abilities or greater flexibility in production processes. Previous evidence has indicated that although larger companies are more likely to sell innovative products this probability increases less than proportionately with size and that among innovative companies, the share of innovative products in total sales tends to be higher in smaller companies (e.g. Brouwer, Kleinknecht, 1996).



Source: Czech Statistical Office, 2010; 2012; 2014

Figure 1 The ratio of innovative enterprises in total number of enterprises engaged in CZSO surveys by size

The study of OECD (2009) also provides mixed results: size is positively correlated, negatively correlated or not correlated with turnover. Economies of scope and scale and knowledge flows within companies seem to play a role in commercialisation.

It is very difficult to confirm or invalidate Hypothesis 1 based on these controversial results. What is the most important from managerial point of view is the finding that companies perform innovation. However, they differ in form of innovation. The essential question is not whether to innovate or not, but how to innovate.

Therefore, respondents answered the question about what innovations had been implemented by the company during the last three years and what importance they carry for the company represented another part of the research. They could select from four predefined answers (see innovation classification according to Oslo Manual 2005). The questionnaire includes a list of examples for each type of innovation. Some of the key research findings are summarized in Table 3.

Table 3 Implemented innovations

Innovation/Frequency	Research 2009 n=53	Research 2010 n=139	Research 2011 n=212	Research 2013-2015 n=354
Product innovation	32%	28%	33%	38%
Process innovation	30%	25%	27%	29%
Organization innovation	17%	22%	19%	12%
Marketing innovation	20%	23%	21%	21%
None	1%	2%	0%	0%

Source: Own research

These balanced results highlight the fact that product innovations often require process innovations, e.g. in the form of acquiring new production technology, and in order for these product innovations to be successful on the market and bring the company higher value, it is often necessary to seek new distribution channels via marketing innovations.

The measurement instrument used in the questionnaire to estimate the importance of innovation was evaluated a five-item Likert scale: 1 – very important, 2 – important, 3 – neutral, 4 – not important, 5 – completely unimportant.

In the summary of the percentage ratio of positive answers, i.e. values 1 (very important) and 2 (important), the order of individual possibilities was determined. Therefore, results show that respondents see the importance of innovations for their company in the following order: innovation of products, processes, organization, and marketing. Evaluation of the importance of individual types of innovation for companies is shown in Table 4.

Table 4 Importance of particular innovation types for companies (Source: Own research)

2010 (n=139)	Average	Standard deviation	Modus	Evaluation 1–5 (%)					Σ 1+2 (%)
				1	2	3	4	5	
Product innovation	2.2857	1.0302	2	18	29	14	12	27	47
Process innovation	2.2419	0.9619	2	18	28	16	10	28	46
Organizational innovation	2.3485	0.9127	2	15	28	26	8	23	43
Marketing innovation	2.3226	0.9801	2	16	27	19	10	28	43
None innovation	2.3125	0.8455	3	4	7	7	1	81	11
2011 (n=212)									
Product innovation	2.1845	1.2101	1	37	33	16	7	7	70
Process innovation	2.2000	0.8623	2	22	43	27	6	2	65
Organizational innovation	2.4379	1.1762	2	25	34	21	14	6	59
Marketing innovation	2.4426	1.0167	2	18	35	30	12	5	53
2013-2015 (n=354)									
Product innovation	2.5426	1.4769	2	120	193	94	80	53	313
Process innovation	2.4442	0.9926	2	128	187	106	67	41	315
Organizational innovation	2.6220	0.9256	2	100	188	174	53	59	288
Marketing innovation	2.5077	0.9024	2	107	181	127	66	37	288

Source: Own research

4 Discussion

Joseph A. Schumpeter studied the effect of size on a company's innovation ability. He wrote – in 1909 – that small companies were more inventive than large ones. But then, in 1942, Schumpeter reversed himself. Big firms have more incentive to invest in new products he decided because they can sell them to more people and reap greater rewards more quickly. In a competitive market, inventions are quickly imitated, so a small inventor's investment often fails to pay off. However, studies worldwide based on real economic data do not confirm any of his hypotheses. Important inventions are distributed between quite small and large companies.

Economic analyses of the relation between R&D activity and the company's size have focused largely on the Schumpeterian hypothesis, which generally asserts a positive link between firm size and R&D activity. Large companies, it is argued, are in a better position to carry out the R&D necessary for innovation and may also be better placed to exploit the market potential of each innovation (Love, Roper, 1999) as well as the possibility of employing professional managers and technical experts, better protection of innovation against competition, strong marketing, etc. Large companies have stronger cash flows to fund R&D activity and their large sales volume implies that the fixed costs of R&D activity can be spread over a large sales base. Large firms have access to a wider range of knowledge and human capital skills than small firms, enabling higher rates of R&D activity (Rogers, 2003).

In contrast, the often mentioned innovation advantages of small companies include entrepreneurial dynamics and flexibility, mostly derived from a simple, flatter organisational structure and translating into significantly more flexible responses to, and faster capitalisation of, market opportunities (Muška et al., 2009; Rothwell, 1989). In other words, small companies have their flexibility in shifting employees to R&D-related projects and less complex management structures in implementing new projects (Kamien, Schwartz, 1982; Acs, Audretsch, 1988; Link, Rees, 1990; Bhattacharya, Bloch, 2004).

The current trend is that new inventions do not come from big or small companies but come into being in an "ecosystem" in which numerous small enterprises are clustered around a big one, such as Apple. The system is based on huge companies with sufficient means to invest in inventions. They exploit new inventions on a mass scale and reap appropriate rewards from them. Globalisation is a benefit to them. All enterprises must fight in a global competition, which often neglects copyright and may receive support from domestic governments.

An invention must therefore be brought to the market promptly and on a mass scale, before it is replicated by others and the profits are lost. Big companies are able to do this. A small company may bring solutions to some problems of the system of public healthcare or invent a fantastic electric vehicle but is unable to translate them into practice. To do this, it needs a big firm with sufficient capacity to change the entire healthcare system or build a network of charging stations for electric vehicles in a large part of the country.

Quite obviously, the innovation behaviour of enterprises is given by far more than just size. It is also influenced by the business activities of the enterprise in question, the nature of the sector and markets where the enterprise operates and the nature of innovations as such.

Table 5 Positives and negatives of factors in small and big companies

Factor	Small company	Big company
Management	+ Rapid decision-making, little bureaucracy, willingness to take risks. - Entrepreneurs often lack management training and experience.	+ Professional management able to control complex organisations. - Tendency to excessive bureaucracy, managers often slip into the role of mere administrators and lose the dynamism required for long-term goals and opportunities.
Communication	+ Rapid effective and informal communication inside the company. - Often lack of time and resources for identifying and using important external sources of qualified science and technology knowledge.	+ Ability to establish comprehensive external science and technology networks. - Cumbersome internal communication, long decision chains across a large hierarchy of levels and hence slow reaction times.
Organisation	+ Generally a simple organisational structure, mostly with certain dynamics, suited to utilising the limited human resources of a small enterprise.	+ Potential for using the synergy of competences contained in a large whole, e.g. various divisions. - General complex and mechanistic organisational structure.
Marketing	+ Ability to respond quickly to changing market requirements, ability to exploit dominance opportunities. - Ability to enter new, especially foreign markets is limited and often prohibitively costly.	+ High market power based on existing products, effective distribution and servicing facilities. - Ignoring (and failure to look for) emerging markets with considerable growth potential.
Finance	+ Innovations can be less costly in small companies - Innovations represent a relatively large financial risk which cannot be spread rationally (e.g. due to a limited product portfolio). - Accessing external capital can be a problem, relatively high cost of capital (financing from internal capital).	+ Ability to obtain external capital, operation on capital markets, possibility to spread financing risk across the whole portfolio of products. - Shareholder pressure on profitability (rapid profits from dividends) can force the management to prioritise short-term goals.
Technical capabilities	+ Technical capacities are not fragmented into many units. - Lack of top technology and science experts, R&D can be too costly and its "size" may result in diseconomies of R&D scope.	+ Ability to use economies of scale in production as well as R&D, can support the establishment of large development units, which in turn brings in top specialists. - Large units can over time become isolated from other corporate functions.
Regulations	+ Governmental regulations often grant reliefs and subsidies to small enterprises. - Other regulations, complex regulations and standards may be a great burden with costly agenda and costs of lost opportunities. - Patent procedures serving to protect innovations often too costly for a small company.	+ Ability to undergo patent procedures and defend patents, better ability to satisfy regulatory requirements and related measures imposed by the State. - The government can be very stringent with some large companies in regulation enforcement.

Ability to learn	+ Capable of fast learning and adapting to new routines, procedures and strategies.	- Slower to learn due to being locked in to well-established routines and practices.
Growth	+ Potential for growth through differentiation strategy, narrow techno/market leadership. - Problems in accessing external capital for growth. - Problematic ability to manage growth.	+ Big companies are able to achieve price leadership by using the learning curve and ability to achieve economies of scale.

Source: Modified from Muška et al., 2009; Rothwell, Dodgson, 1994

Conclusion

Our conclusion has to begin with unavoidable embarrassment. Based on gained data from own surveys it is very difficult to confirm or invalidate our initial hypothesis. With respect to the impact of company size (i.e. number of employees and turnover), the research survey in 2009 approximates earlier findings on innovation activities and their form: generally, larger companies are more likely to innovate. However, progressive research surveys in 2010-2015 revealed that the most innovative companies were SMEs. Furthermore, these findings contrast with studies from Czech Statistical Office or OECD that consider large companies as innovative leaders.

In spite of such contradiction, we think that our analysis still makes a sense and provides some useful insights. What is the most important result from our surveys is the finding that Czech manufacturing companies perform innovation no matter the size of company.

The purpose of our paper, as previously stated, is to contribute to the study of innovation management by analysing relation between size of the company and implemented innovation. For this reason, we decided to conduct an exploratory research useful to capture the details of the phenomenon. As a consequence, the results of this study are exploratory and are not to be interpreted as the only possible answer to the research question.

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Optimal replenishment policy for deteriorating items with the possibility of delay in payment

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Abstract

Purpose of Paper: The purpose of the paper is to present a model allowing the retailer to determine the optimal price of two kinds of items in a situation where the supplier provides the retailer with an interest-free loan for a contractually agreed period. The model is constructed with the expectation of time-dependent demand and has been developed for deteriorating items.

Methodology/Methods: The economic theory that forms the essential basis for the model is explained in the introductory section and serves as a basis for the drawing up of the model. Methods of analysis, synthesis, dynamic modeling, differential calculus of multivariate functions, and the solution of ordinary differential equations are also used.

Scientific Aim: The scientific aim is to verify whether an optimization problem is solvable, and determine the maximum length of the interval over which the goods can be sold with a profit in a situation where the model features two kinds of deteriorating items.

Findings: The situation where the dealer sells all his goods in time and the situation where this period is not observed are analyzed in the paper. Because the used variables form compact set and analysed function is continuous on this space, we can use Weierstrass Theorem for additional calculation with success. Thanks to the exact expression of the model and the availability of suitable software it is possible to assess the effect of any changes in external factors.

Conclusions (Limits, Implications, etc.): The paper presents a model allowing the retailer to determine the optimal price of the goods in a situation where the supplier offers the dealer a permissible delay in payment for two kinds of goods. The results are presented in graphic form. The model proposed in the paper may be expanded in the future.

Keywords: differential calculus of multivariable functions, differential equations, Taylor series, replenishment policy, deteriorating items

JEL Classification: C02, C61, G31

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Introduction

One of the problems frequently discussed in connection with the need for a higher productivity of work, higher effectiveness of management processes and other activities taking place inside the companies is the problem of inventories. In spite of their positive function, inventories are often regarded as a weak point in the management's work. This is why managers usually try to reduce inventories to the lowest possible level. One of the advantages of inventories is that their levels are well known and easily measurable. Therefore, inventory levels can be easily monitored in entire chains of companies. Inventory management is the focus of attention of specialists in the application of mathematical methods to company management.

The authors of this paper are concerned with the design of a mathematical model which would allow the retailer to determine the optimal price per unit of goods and determine the maximum length of the interval over which the goods can be sold with a profit. Certain parameters are assumed to be known. Also, the model is constructed with the expectation of time-dependent demand and has been developed for two rapidly deteriorating kinds of items. It is further assumed that inventories are drawn on the basis of time-dependent demand only.

The scientific aim of the paper is to verify whether such an optimization problem is solvable. To achieve this aim, methods of analysis and synthesis and methods of mathematical analysis (differential calculus of functions of several variables) were used. The new model presented in the paper is illustrated by an example including a graphical interpretation of the solution.

Literature Review

For many companies, inventory represents the greatest investment. The paper Lambert et al. (2000), for instance, states that while in manufacturing companies inventory may represent over 20% of the total assets, in trading companies this figure may be higher than 50%. It is the competitive character of the market over the last 20 to 25 years which has led the companies to raise their inventory levels; in an effort to meet their customers' requirements in diverse market segments they have considerably expanded their product ranges. Simultaneously, customers have started to demand a higher accessibility of products. Within many companies, these trends have led to increases in inventory levels. Adequate attention must therefore be paid to inventory management; it can help to improve the company's cash-flow, which in turn leads to a higher return of investment.

In the retail environment, inventory management represents an essential part of the business transactions. Product accessibility has an immediate effect on the shoppers' experience, and subsequently may greatly influence their behavior. The authors of the paper Corsten and Gruen (2004) found that in 31% of the cases the shoppers went to another store to get the missing items. Another finding was that in 72% of the cases the cause of the shortage of goods in stock was related to the store's ordering system. A number of studies deal with inventory management in retail environment, taking account of such aspects as goods perishability for example Blackburn and Scudder (2009), information accuracy - Fleisch and Tellkamp (2005) or DeHoratius (2008) and demand substitution - Smith and Agrawa (2000) or Yücel et al. (2009).

Among studies dealing with deteriorating items, let us mention, for instance, Chang et al. (2006), Dye et al. (2007), and Dye (2007), who defined a condition for the determination of the optimal level of deteriorating inventories. They also give a characterization of the optimal price for a specified replenishment plan and propose an algorithm for solving their problem. Maihimi and Kamalabadi (2012) focus on the management of „non-instantaneous perishable items“ as part of partial backlogging. These authors look for the optimal selling price, optimal replenishment plan, and optimal quantities, assuming that the demand and price are time-dependent; they also give an algorithm for solving the problem. Dasu and Tong (2010) deal with the situation where two price regimes must be considered for the selling of deteriorating items with a finite planning horizon. Other interesting studies include Ferguson and Koenigsberg (2007), or Li (2014),

In many cases, the retailer is unable to settle the invoice immediately upon obtaining it. Nevertheless, a general practice in industry is to allow a certain time for payment of the items supplied. Goyal (1985) created an EOQ model in which he permits delays in payment to the supplier. His work was continued by other authors such as Chung and Huang (2009), who generalized the original model; his model allows a shortage of goods in stock. Lin et al. (2012) presents an integrated inventory level comprising the possibility of defective goods. Teng et al. (2012) is primarily concerned with the optimal ordered quantity and cycle time of the EOQ ordering system, assuming time-dependent demand and permissible delay in payment. Guchhait et al. (2013) investigated the effect of partial trade credit on order quantity, proposing a hybrid metaheuristic algorithm for obtaining the solution. Molamohamadi (2014) used genetic algorithms for his inventory optimization algorithm. Taleizadeh et al. (2013) summarized the EOQ models in which payment is effected by cash or credit cards. Yu (2013) analyzes four possible scenarios, reaching the conclusion that cooperation between the supplier and the client to develop a strategy leads to a higher profit for both. He and Huang (2013) continued the work begun by Ouyang et al. (2006) and Jaggi et al. (2008) to propose an algorithm which makes it possible to maximize the total profit and optimize some parameters of an inventory model with a two-echelon credit policy.

Model for Rapidly Deteriorating Goods

The model which is constructed in this section is based on the assumption that there are two kinds of rapidly deteriorating items supplied by a one supplier. Demand for these items is time-dependent and inventory is drawn on the basis of demand only. The model permits the retailer to optimize the selling price for the items in a situation where the supplier offers a permissible delay in payment, and determine the maximum possible payback period.

In addition, the following assumptions are made:

- Demand for the items is a strictly decreasing function of the price and the time variable
- No shortages are allowed
- Infinite planning horizon.

In the sequel, the following variables will be used:

H : holding cost per unit (annual, excluding interest charges on overdue payment),

c_1 : purchasing cost per unit of first kind of item, $c_1 > 0$,

c_2 : purchasing cost per unit of second kind of item, $c_2 > 0$,

p_1 : selling price per unit of first kind of item, $c_1 < p_1$,

p_2 : selling price per unit of second kind of item, $c_2 < p_2$,

θ_1 : deterioration rate; $0 < \theta_1 < 1$,

θ_2 : deterioration rate; $0 < \theta_2 < 1$,

I_d : interest received per currency unit per year,

I_c : annual interest charges on overdue payment per currency unit per year,

m : period of permissible delay in payment – trade credit period,

s : order cost,

$I_1(t)$: inventory level at time t ($0 \leq t \leq T$) for item 1,

$I_2(t)$: inventory level at time t ($0 \leq t \leq T$) for item 2,

T : reorder point $T > 0$,

D_1 : annual demand, depending on time and price per unit, where $D_1(p_1, t) = \alpha_1 p_1^{-\beta_1} t$,

D_2 : annual demand depending on time and price per unit, $D_2(p_2, t) = \alpha_2 p_2^{-\beta_2} t$.

For the demand, it is assumed that $\alpha > 0$ and $\beta > 1$, where α is a scaling factor and β is a price-elasticity coefficient. Ho et al. (2008)

Below, the simplified notation $a_1 = \alpha_1 p_1^{-\beta_1}$ and $a_2 = \alpha_2 p_2^{-\beta_2}$ will be used.

$Z(T, p_1, p_2)$: total annual profit.

Model Construction

The modeling of phenomena which have their origin in economic reality and are described by statistical data is based on such branches of mathematics as statistics, numerical analysis, operational research, linear and dynamic programming, optimization, etc. (for example David and Křápek (2013), Šimánková (2011), Fumi (2013)). In the following construction, methods of mathematical analysis will be used.

It follows from our initial assumptions that the inventory level of one kind of item $I_i(t)$, $i = 1, 2$ is a strictly decreasing function of time in accordance with how the demand is satisfied. The change in inventory level in time can be described by the following differential equations:

$$\frac{dI_i(t)}{dt} + \theta I_i(t) = -D_i(p_i, t), \quad 0 \leq t \leq T \quad (1)$$

and therefore

$$\frac{dI_i(t)}{dt} + \theta I_i(t) = -a_i t, \quad 0 \leq t \leq T, \quad (2)$$

where $a_i = \alpha_i p_i^{-\beta_i}$, $i = 1, 2$.

Assuming that at the end of the order cycle all the items have been drawn, we define the initial condition as $I_i(T) = 0$.

In the course of one year the retailer sells $\frac{a_i T}{2}$ units of items and purchases a total of $\frac{a_i(-e^{\theta_i T} + \theta_i T e^{\theta_i T} + 1)}{T \theta_i^2}$ units of items.

He must pay back the full amount of his trade credit, which is $\frac{c_i a_i(-e^{\theta_i T} + \theta_i T e^{\theta_i T} + 1)}{T \theta_i^2}$ annually.

There are several approaches to the determination of the cost interest and yield interest. To simplify the computations, the Goyal (1985) approach published will be used in the following section.

Analysis of the situation where the items are sold in time

If $T \leq m$, then the retailer has no additional costs; on the contrary, he can gain annual interest of

$$\frac{p_1 I_d a_1 T(T-m-1) + p_2 I_d a_2 T(T-m-1)}{2}.$$

By using the Taylor expansion (first three terms of the series), the total annual profit can be expressed in the form of an equation which considerably simplifies the subsequent numerical computations

$$\begin{aligned} Z1 = Z1(T, p_1, p_2) = & \frac{p_1 a_1 T}{2} - \frac{c_1 a_1 \left(- \left(1 + \theta_1 T + \frac{\theta_1^2 T^2}{2} \right) + \theta_1 T \left(1 + \theta_1 T + \frac{\theta_1^2 T^2}{2} \right) + 1 \right)}{T \theta_1^2} \\ & - \frac{H a_1 \left(-T^2 \theta_1^2 + 2 \left(1 + \theta_1 T + \frac{\theta_1^2 T^2}{2} \right) T \theta_1 - 2 \left(1 + \theta_1 T + \frac{\theta_1^2 T^2}{2} \right) + 2 \right)}{2 \theta_1^3} \\ & + p_1 I_d \left(\frac{-a_1 T(T-m-1)}{2} \right) + \frac{p_2 a_2 T}{2} \\ & - \frac{c_2 a_2 \left(- \left(1 + \theta_2 T + \frac{\theta_2^2 T^2}{2} \right) + \theta_2 T \left(1 + \theta_2 T + \frac{\theta_2^2 T^2}{2} \right) + 1 \right)}{T \theta_2^2} \\ & - \frac{H a_2 \left(-T^2 \theta_2^2 + 2 \left(1 + \theta_2 T + \frac{\theta_2^2 T^2}{2} \right) T \theta_2 - 2 \left(1 + \theta_2 T + \frac{\theta_2^2 T^2}{2} \right) + 2 \right)}{2 \theta_2^3} \\ & + p_2 I_d \left(\frac{-a_2 T(T-m-1)}{2} \right) - \frac{s}{T} \end{aligned} \quad (3)$$

It follows from (3), that the function $Z1$ is a continuous function of three variables for arbitrary $T > 0$, $p_1 > 0$ and $p_2 > 0$.

It is important for the modeling of our economic process that the usual restrictions imposed on the variables p_1 and p_2 represent a so-called compact set in the space of the variables. Evidently, the function $Z1$ is also continuous in this set. It follows from the so-called Weierstrass Theorem (see the differential calculus of functions of several variables) that the function $Z1$ attains its maximum and minimum value on the compact set under consideration. These values may be attained either on the boundary of the compact set or at the points of local extremes.

Since $\frac{\partial^2 Z1(T, p_1, p_2)}{\partial T^2} < 0$, the function $Z1$ is a concave function in the given set, and therefore any of its extremes must be its maximum.

Analysis of the situation where the items are sold too late

If $T \geq m$, the retailer must take a credit at time m , on which credit he pays annual interest of

$$\begin{aligned} & \frac{I_c p_1 a_1 (m^2 \theta_1^2 + 2T \theta_1 e^{\theta_1(T-m)} - 2m \theta_1 - T^2 \theta_1^2 - 2e^{\theta_1(T-m)} + 2)}{2T \theta_1^3} + \\ & + \frac{I_c p_2 a_2 (m^2 \theta_2^2 + 2T \theta_2 e^{\theta_2(T-m)} - 2m \theta_2 - T^2 \theta_2^2 - 2e^{\theta_2(T-m)} + 2)}{2T \theta_2^3} \end{aligned} \quad (4)$$

Nevertheless, he can gain annual interest on the deposit made with the money from the sales received before the time m , which is $\frac{a_1 m^2 I_d + a_2 m^2 I_d}{2T}$.

By using the Taylor expansion (the first three terms of the series), the total annual profit can be expressed in the form of an equation, which considerably simplifies subsequent numerical computations

$$\begin{aligned}
 Z2 = Z2(T, p_1, p_2) = & \frac{p_1 a_1 T}{2} - \frac{c_1 a_1 \left(- \left(1 + \theta_1 T + \frac{\theta_1^2 T^2}{2} \right) + \theta_1 T \left(1 + \theta_1 T + \frac{\theta_1^2 T^2}{2} \right) + 1 \right)}{T \theta^2} \\
 & - \frac{H a_1 \left(-T^2 \theta_1^2 + 2 \left(1 + \theta_1 T + \frac{\theta_1^2 T^2}{2} \right) T \theta_1 - 2 \left(1 + \theta_1 T + \frac{\theta_1^2 T^2}{2} \right) + 2 \right)}{2 \theta_1^3} \\
 & + \frac{p_2 a_2 T}{2} - \frac{c_2 a_2 \left(- \left(1 + \theta_2 T + \frac{\theta_2^2 T^2}{2} \right) + \theta_2 T \left(1 + \theta_2 T + \frac{\theta_2^2 T^2}{2} \right) + 1 \right)}{T \theta^2} \\
 & - \frac{H a_1 \left(-T^2 \theta_2^2 + 2 \left(1 + \theta_2 T + \frac{\theta_2^2 T^2}{2} \right) T \theta_2 - 2 \left(1 + \theta_2 T + \frac{\theta_2^2 T^2}{2} \right) + 2 \right)}{2 \theta_2^3} \\
 & - I_c p_1 a_1 \frac{\left(m^2 \theta_1^2 + 2 T \theta_1 \left(1 + \theta_1 (-m + T) + \frac{\theta_1 (-m + T)^2}{2} \right) - 2 m \theta_1 \right)}{2 T \theta_1^3} \\
 & - I_c p_1 a_1 \frac{\left(T^2 \theta_1^2 - 2 \left(1 + \theta_1 (-m + T) + \frac{\theta_1 (-m + T)^2}{2} \right) + 2 \right)}{2 T \theta_1^3} \\
 & - I_c p_2 a_2 \frac{\left(m^2 \theta_2^2 + 2 T \theta_2 \left(1 + \theta_2 (-m + T) + \frac{\theta_2 (-m + T)^2}{2} \right) - 2 m \theta_2 \right)}{2 T \theta_2^3} \\
 & - I_c p_2 a_2 \frac{\left(T^2 \theta_2^2 - 2 \left(1 + \theta_2 (-m + T) + \frac{\theta_2 (-m + T)^2}{2} \right) + 2 \right)}{2 T \theta_2^3} - \frac{s}{T} + \frac{a_1 m^2 I_d + a_2 m^2 I_d}{2 T}.
 \end{aligned} \tag{5}$$

The same assumptions which hold for the function Z1 also hold for the function Z2.

Since $\frac{\partial^2 Z2(T, p_1, p_2)}{\partial T^2} < 0$, the function Z2 is a concave function on the given space, and therefore any of its extremes must be its maximum.

Example

Let us assume that the parameters of a fictitious retail store are given as follows:

$H = 1$ (units per year), $I_c = 0.1$ (currency units per year), $I_d = 0.01$ (currency units per year), $c_1 = 19$ (currency units per year), $s = 120$ (currency units per piece), $\alpha_1 = 7300000$, $\beta_1 = 1.7$, $\alpha_2 = 7200000$, $\beta_2 = 1.8$, $c_2 = 22$ (currency units), $m = 10/365$ (roku), $\theta_1 = 0.1$, $\theta_2 = 0.07$. Both items are supplied by one supplier and simultaneously in one supply.

Our problem is to determine the optimal price per unit of items under the assumption that item „2“ does not exceed the price of item „1“ by more than 20%, otherwise the item would become dead stock. The maximum possible time of sale is limited by the fact that the items have limited durability. Therefore, $T < 30/365$.

In accordance with the above, we assume that the selling price is higher than the purchasing price and that the goods can be sold on the first day at the earliest, i. e. $T > 0$.

Process to Determine the Extremes

If the function Z1 has partial derivatives of the first order, then it can have a local extreme (local minimum or maximum) at the point $X = [T^0, p_1^0, p_2^0]$ only if

$$\frac{\partial Z1}{\partial T}(X) = 0, \frac{\partial Z1}{\partial p_1}(X) = 0, \frac{\partial Z1}{\partial p_2}(X) = 0. \tag{6}$$

In addition, let the function $Z1$ have continuous partial derivatives of the second order in a vicinity of the point X . Let us denote

$$Z1''(X) = \begin{pmatrix} \frac{\partial^2 Z1}{\partial T^2}(X) & \frac{\partial^2 Z1}{\partial T \partial p_1}(X) & \frac{\partial^2 Z1}{\partial T \partial p_2}(X) \\ \frac{\partial^2 Z1}{\partial p_1 \partial T}(X) & \frac{\partial^2 Z1}{\partial p_1^2}(X) & \frac{\partial^2 Z1}{\partial p_1 \partial p_2}(X) \\ \frac{\partial^2 Z1}{\partial p_2 \partial T}(X) & \frac{\partial^2 Z1}{\partial p_2 \partial p_1}(X) & \frac{\partial^2 Z1}{\partial p_2^2}(X) \end{pmatrix} \quad (7)$$

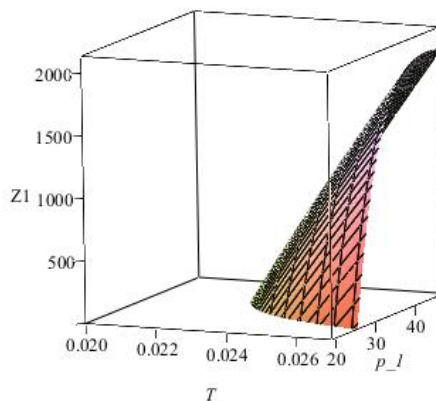
the matrix of second partial derivatives of the function $Z1$ at the point X . Then the matrix $Z1''(X)$ is symmetrical. If this matrix is positive definite, i. e. if all its main minors are positive, then the function $Z1$ has a strict local minimum at the point X . If the matrix $Z1''(X)$ is negative definite, i. e. if its first-order and third-order main minors are negative and its second-order main minor is positive, then the function $Z1$ has a strict local maximum at the point X .

The same process can be used to find the maxima and minima of the function $Z2$.

All the computations were carried out with the Maple System. Maple is a popular mathematical program capable of performing symbolic computations. It is similar to Mathematica and Maxima, except that these programs offer much fewer functions in comparison with Maple. In addition to being able to perform analytical calculations with formulas, Maple can also manage numerical computations and graphical representation of results. The system creates an attractive user environment and provides a wide range of possibilities for the use of quantitative methods in practice, application problems, scientific calculations, and many other areas.

Items are sold and credit is paid back in time

The surface shown in Fig. 1 represents situations which may arise under given conditions, if we assume that the retailer does not suffer a loss, sells the items and pays back the credit within the specified period. Assuming that the items are sold under the specified conditions, he will maximize his profit at $T = 0.274$ and $p_1 = 43.9$, $p_2 = 52.68$.

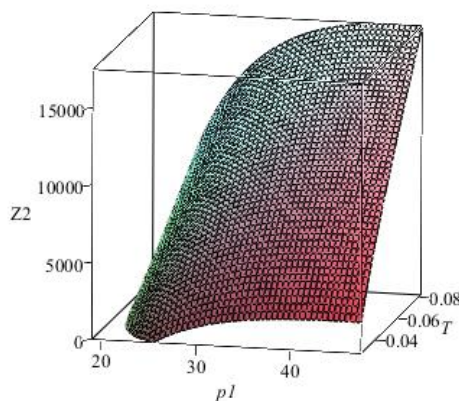


Source: Own

Figure 1 The retailer pays back the credit within the specified period

Items are not sold and credit not paid back in time

Let us now consider a situation where the retailer knows that he will not be able to meet the credit payback period. In that event, the price is determined by maximizing the function $Z2$, because the retailer must pay interest charges on overdue payment from time $T > m$. The retailer makes the maximum profit, if the price is $p_1 = 44.85$, $p_2 = 53.82$ and the credit is paid back at time $T = 0.82$.

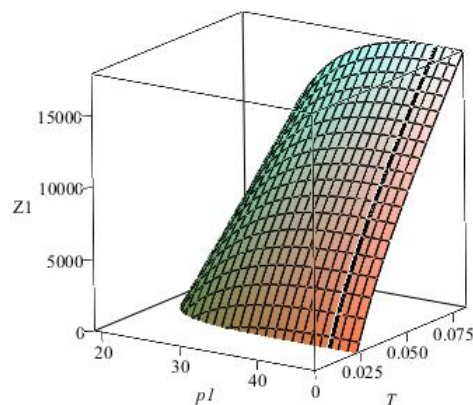


Source: Own

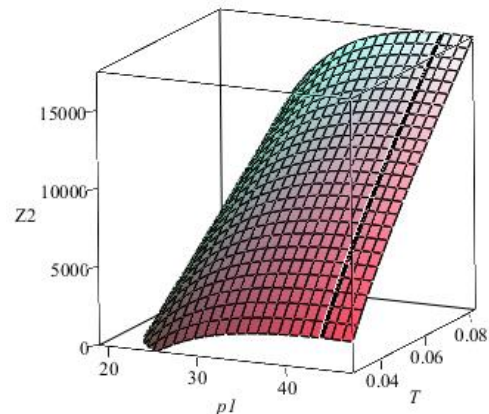
Figure 2 The retailer will not to meet the credit payback period.

Items are expected to be sold in time to meet the credit payback period, but in the end this period is not met

Let us now consider the situation where the retailer at first expects to sell his items in time, but in the end is unable to meet this period. The situation is illustrated by two graphs; the surface indicates the profit development, where the price is determined in the same way as in the first case ($p_1 = 43.9$, $p_2 = 52.68$). Figure 3a) describes the situation where the retailer expects all the items to be sold at time $T = 0.82$, which is the credit payback period. The total profit at time $T = 0.83$ is 17943.57. In the second case, the credit payback period was $T = 0.274$, and the retailer must pay interest charges on overdue payment from time $T > m$. In this case, the total profit at time $T = 0.83$ is lower – 17484.76586. Figure 3b) describes the situation where the credit payback period is not met.



Situation a)



Situation b)

Source: Own

Figure 3 The profit development in two situation

Conclusion

This paper presents a model for the computation of the optimal price and maximum possible payback period in the case of credit for deteriorating goods, where the supplier offers the retailer permissible delays in payment. Two types of situations are analyzed: a situation where the retailer sells all the items in time and meets the credit payback period, and a situation where this period is not met. The theory is illustrated by an example with graphical representation of the results.

The model proposed in the paper may be expanded in the future. One of the possibilities is to consider a generalized model allowing for shortages of items, quantity discounts, inflation etc.

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Management of the image of higher education institution in times of web 2.0 and media convergence

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Abstract

Purpose of the article Managing the image of the university becomes difficult at a time when rapid development follows in media and communication techniques. The development of the Web 2.0 and the social media allows for greater activity of the stakeholder groups.

The aim of the article is to show changes entailed by the convergence of media and to show features of social media in the context of university image management.

Methodology/methods The method of the analysis of secondary materials (university web pages) was adopted and the method of a survey, conducted among students.

Scientific aim The analysis carried out by the author aimed at identifying what social media are most commonly used by Polish universities and investigating what the opinion is of students on the issue of the use of social media by universities.

Findings Facebook is now the most common channel used by universities, activities there are conducted in a professional manner. Still, low is the involvement of young people in the co-creation of its content. In the process of selecting universities by the youth, university profiles in social media almost do not matter, the website is still the main source of information, although 26% also have a look at social media.

Conclusions Universities should bet on greater activation of students in the creation of the content in social media, so as to clearly distinguish university profiles from websites. However, the management of marketing communication in the Web 2.0 environment should be preceded by an analysis of the needs and expectations of young recipients. Social media also change another issue, when it comes to image management - negative opinions can spread rapidly through networks, and this is the need to pay more attention to relationship marketing, stakeholder satisfaction and monitoring public opinion.

Keywords: image of university, social media, media convergence, prosument, marketing communication

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1 University image management

University image is one of the important elements of competition, especially in a situation where there are: fierce competition in the market and unfavorable (demographic) trends in the environment. Management becomes difficult, due to rapid changes in media and communication techniques.

Image management is the basis of an overall approach to identify organizations, carried out by visual, communication and organizational procedures.

An integrated business planning system for university image management involves several steps:

- diagnosis of the initial situation - to determine the image perceived in different groups, strengths and weaknesses of the organization, opportunities and threats in the external environment,
- development of a strategic plan - to determine the image of the desired strategic objectives associated with the formation of the image, providing the necessary financial resources,
- designation of areas of responsibility, or collaboration with an external public relations agency,
- development of an operating plan, taking into account the Web 2.0 characteristics,
- ongoing control of measures undertaken and potential adjustments to plans, monitoring changes in online communication,
- performance test – of the real image, achieved after the measures taken.

An important aspect of university image management is to identify factors affecting its formation and manage them so as to achieve the desired image. The key factors in the case of university image include, among others: educational and scientific offer, methods of communication, history, staff, size of the university, the physical environment, material base, student life and management system.

A unique set of characteristics, norms and values allowing to distinguish the university from the environment and making it easily recognizable (to be identified) is called its identity. University image management usually aims to present the given university as a reliable, modern, customer-oriented organization, focused on cooperation with the environment, keeping pace with changes in the environment, but also based on tradition, stable, coherent.

However, even the most desirable qualities and values determining university identity do not guarantee the creation of a positive image; marketing communication becomes more significant. How K. Wojcik puts it, image is due to the way we communicate identity. (Wojcik 2005, p.39)

1.1 University and Generation Y

University image can be viewed from different perspectives. From the perspective of students, academic staff, employers, business partners, alumni, funders, etc. Internet communication is particularly important from the point of view of relationships with the existing and potential students. The matter of image creation occupies a very important place in the organizational structure of many universities. Usually, persons at the highest levels of management are responsible for contacts with the internal and external environment. However, university image is highly influenced by information and opinions disseminated by students, as, being customers, they are a reliable source of information for peers. Both intangibility and specificity of educational services cause that university image is often the most important factor in choosing a place of study. The young generation (also called Generation Y), currently students, vary from their parents' generation. The Generation Y largely transferred their activities into the Internet, treating it as a source of information, entertainment and a communication center. Any young man is a kind of *homo irretitius*, a human surrounded by a network of new technologies, brought up with digital technologies, with easy access to information. Managing university image must take into account more than only the characteristics of the young generation, namely, the specifics of the current media.

Convergence of media and the development of social media (web-based Web 2.0) create new opportunities for image creation among Generation Y, but also new risks.

2 Convergence and social media

J. Bolter and R. Grusin define a convergence as „Convergence is the mutual remediation of at least three important technologies – telephone, television and computer – each of which is a hybrid of technical, social, and economic practice and each of which offers its own path of immediacy”. (Bolter, Grusin 2000, p.12)

F. Kamiński sees convergence as a result of the digital revolution and the merging of different market sectors: telecommunications, media and information technology. And the factor influencing the acceleration of convergence was the development of the Internet, electronic business, computers' widespread domestic use, the increase in computing power and the development of multimedia applications. (Kamiński 2000, p.23)

Convergence is made possible due to five technical foundations of the network society. The first revolutionary technical change was the continuous miniaturization of components, which enabled the total computerization of telephone networks. The second change was related to digitization, which increases the communication capabilities of the new media. The third issue is the principle of storage and transmission, which has become the basis for the creation of e-mails or web pages. The layer technology structure is the fourth cornerstone, division into hardware, software and utility software, which makes computers MFPs. And finally, the fifth technical foundation is to improve the quality of terrestrial and wireless links, which have improved the speed and geographical coverage of the new media.(Dijk 2010, p.67)

Convergence of media is also important for the communication processes taking place at the university, on the one hand, creating university image on the outside requires a multi-channel approach, on the other, such media as social networking enable the use of different forms of media (text, photos, videos) contained in one place (the social media), often interconnected with hyperlinks (links to profiles on other social media, etc.).

2.1 Define social media

The technological dimension of convergence refers to, in concrete terms, combining the function of different media in the same device.(Filiciak 2007, p.44) However, media convergence also entails a cultural change in the dimension, leading to the formation of, as H. Jenkins calls it, culture of participation.(Jenkins, 2007, p.9) The culture of participation means a transition from a passive customer, only a recipient of marketing activities, into an active one who wants to be involved in shaping the marketing policy of the organization. Social media development, as based on the Web 2.0 environment, facilitates such participation.

According to N. Dabner, social media should be simply described as tools for the Internet access and tools based on mobile technologies that allow users to create, contribute to and disseminate text, sound and video through appropriate technological solutions.(Dabner 2012, p.69)

A. M. Kaplan and M. Haenlein define social media with an emphasis on the technological point of view. Social media, for the authors, are a group of applications based on Internet solutions, basing on the ideological and technological foundations of the Web 2.0, enabling the creation and sharing of the content that was generated by the users themselves.(Kaplan, Haenlein 2007, p.61)

Social media include social networking sites (Facebook, Instagram, Pinterest), blogs, microblogs (Twitter), the open encyclopedia (Wikipedia), Youtube, online forums.

2.2 Social media characteristics

Social media converge a few elements that intermingle and complement each other:

- have the features of both: the mass media - to reach a wide audience at the same time,
- and the characteristics of personalized media – make it possible to reach a small group of recipients, and even a single person,
- they are media utilizing movement, sound, image, allow posting files, images, text files, videos, links to other sources and other social media.
- they are interactive, like no other medium, allow content co-creation to enable commenting entries, graphics or videos,
- they make it possible to carry out viral marketing campaigns where users themselves distribute the content,

In addition, social media govern both time and space. It is connected, according to P.Levinson, with the speed (covering distance) and availability (in time) of any information made available on the web.(Levinson 2010, p.120)

Social media offer opportunities for creating the image of a modern, open university, at the same time generating risks of interactivity. Negative entries and comments in social media may become a problem for university image management. This requires skillful moderation of profile content, so as to remove vulgar entries and so as not to be accused of master-minding views and opinions, as Generation Y are attentive observers. Marketing communication of universities in social media is also supported on dialogue rather than unilateral transfer.

Social media cause that a large proportion of the users of these media becomes "carriers" of information about companies and products - by providing information through the whispering about the brand on forums, blogs, portals, etc. They become active participants in the process of creating the image.

Frequent opinions gathered from forums or private profiles of users of social media are much more reliable than official announcements published by universities on the web.

3 Social media in universities' marketing communications

The analysis carried out by the author aimed at identifying what social media are most commonly used by Polish universities and investigating what the opinion is of students, being the main audience of university marketing messages, on the issue of the use of social media by universities.

The method of the analysis of secondary materials (university web pages) was adopted and the method of a survey, conducted among students.

In the first place, profiles of selected public universities, as subordinated to the Minister responsible for higher education, were subject to quantitative analysis.

According to the ministerial list, on 21 March 2015, there are 59 academic public universities in Poland, including:

1. 18 university of technology
2. 18 university
3. 6 university of life sciences
4. 6 academy of physical education
5. 5 university of economics
6. 5 pedagogical universities
7. 1 theological university.(Ministerstwo Nauki i Szkolnictwa Wyższego)

The study assumed that one third of the universities will undergo the analysis - 20 universities selected in proportion to each group (6 universities from the first two categories, 2 universities from categories 3-6).

All of the analyzed universities use social media to promote themselves. Different is the scale of the use of social media - from one to several different media (Table 1, as at 22 March 2015). At the same time there are no major differences in the use of social media between technical universities, universities and other higher education institutions.

Table 1 Social media used by Polish universities

The name of the university	Social media	People who like it (on Facebook)
Selected university of technology		
Silesian University of Technology	Facebook, YouTube, Twitter	13 496
Cracow University of Technology	Facebook, Instagram, YouTube	16 095
Warsaw University of Technology	Facebook, Pinterest, LinkedIn, Instagram, Twitter, University Blog	1273
Gdańsk University of Technology	Facebook, LinkedIn, YouTube, Wykop,	8 755
Opole University of Technology	Facebook, Google+, YouTube	417
Czestochowa University of Technology	Facebook, YouTube	2 634
Selected universities		
University of Warsaw	Facebook, YouTube	32 300
Jagiellonian University in Kraków	Facebook, YouTube, Twitter	44 212
University of Rzeszow	Facebook, Instagram, Twitter, YouTube	7 542
University of Białystok	Facebook	7 101
Nicolaus Copernicus University in Toruń	Facebook, Twitter, YouTube	19 366
University of Zielona Góra	Facebook, Twitter, YouTube	3 764
Selected university of life sciences		
Wrocław University of Environmental and Life Sciences	Facebook, Google+, Twitter, YouTube	9 429
University of Life Sciences in Lublin	Facebook, Google+, YouTube	8 324
Selected academy of physical education		
Academy of Physical Education in Katowice	Facebook	2 902
Academy of Physical Education in Poznań	Facebook, Twitter, YouTube	8 559
Selected pedagogical universities		
Jan Długosz University in Czestochowa	Facebook, Twitter, YouTube	4 120
Siedlce University of Natural Sciences and Humanities	Facebook	4 021
Selected university of economics		
University of Economics in Katowice	Facebook, LinkedIn, Twitter, YouTube, Wykop	12 186
Poznań University of Economics	Facebook, LinkedIn, Google+, Goldenline, Pinterest, Instagram, Twitter,	17 025

Source: own study

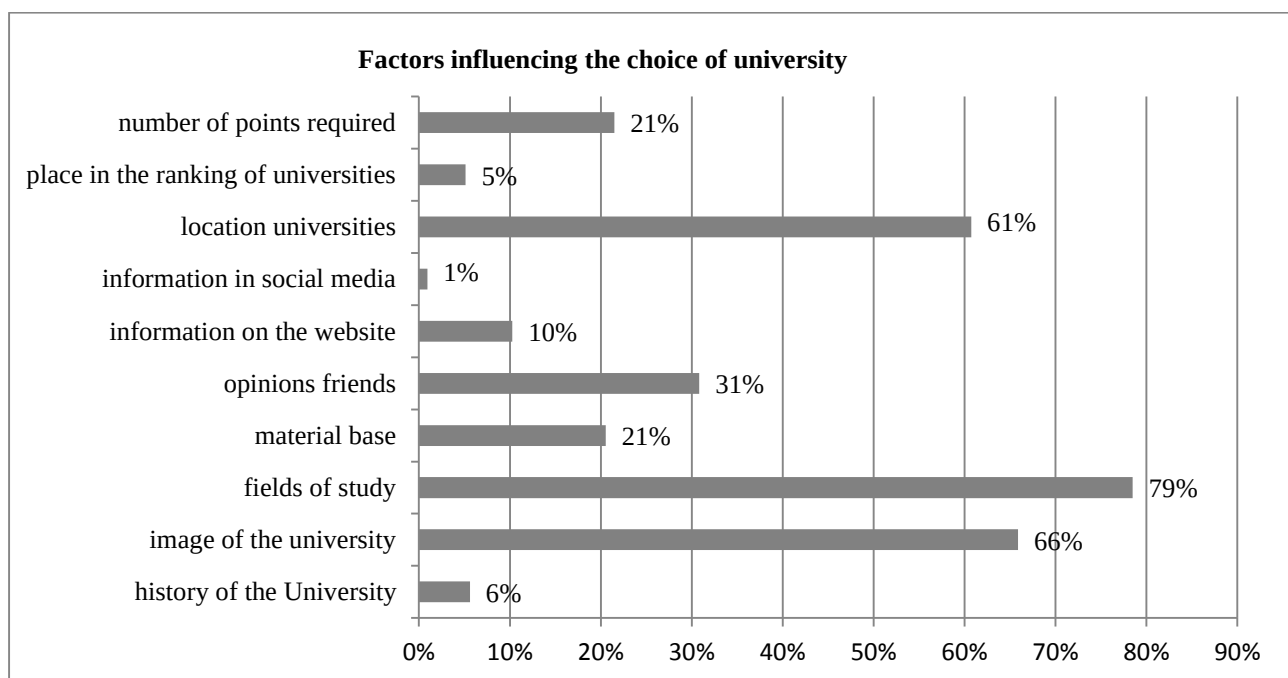
Facebook is the most common medium used by all of the analyzed universities. Apart from the university-wide profiles at most universities, there exist individual Facebook profiles of departments, student governments and academic libraries. With the exception of one university (on the site of which there are no links to social media), almost all universities have links to social media on their home page. But statistics of "likes" of universities differ considerably. (Table 1)

Having reviewed university profiles on Facebook, it can be said that they are carried out professionally and continuously updated. The profiles include a variety of information, photos, videos and links to other social media and the web site. Interaction on the profiles obtains the worst results. There are still relatively not many opinions and comments of students, despite the often large numbers of likes.

The second part presents a survey conducted in the Silesian University of Technology on a group of 214 students of the first and second year of full-time studies. The survey questionnaire was conducted in January 2015.

A few questions were selected from the survey, results are presented below.

When asked about the factors determining the choice of university (students had to identify the 3 most important), the majority pointed to: fields of study, university location and image, followed by opinions of friends, base material and the number of points required. The number of people who pointed to information in social media as a determinant of the choice of university accounted only for 1% (Figure 1).

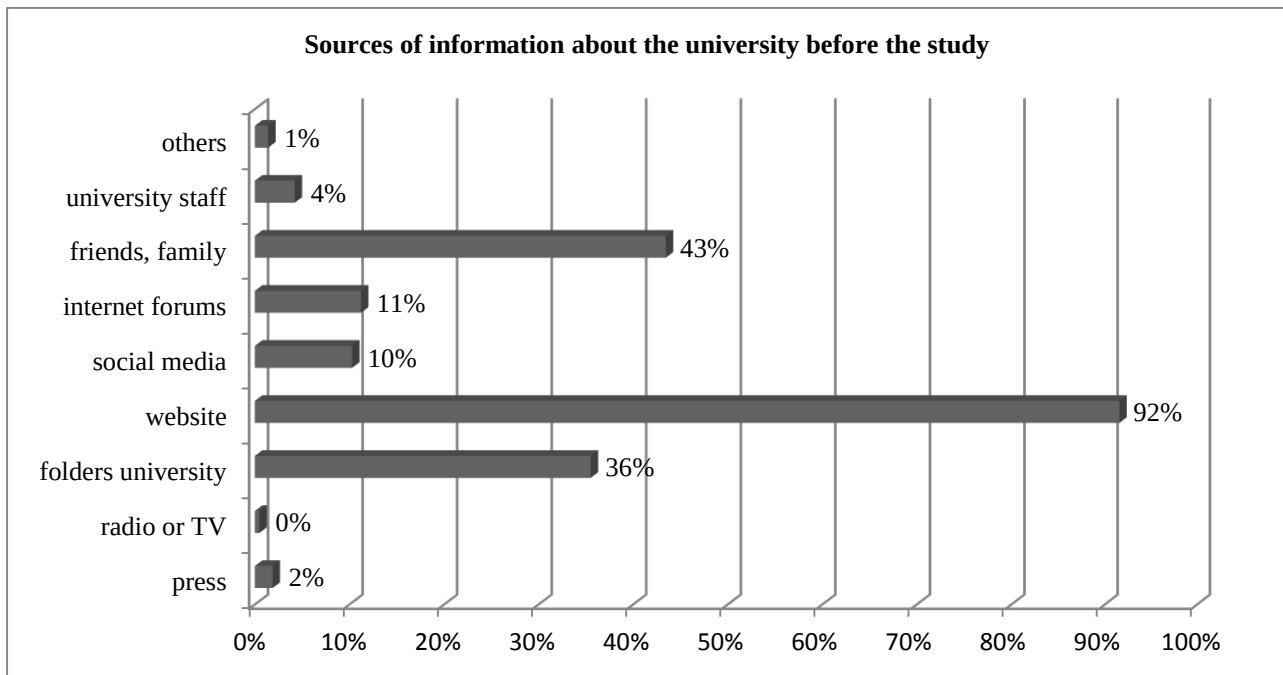


Source: own study

Figure 1 Factors influencing the choice of university

Other factors mentioned by the students included: student life, extra activities, family tradition, the required subjects, dormitories.

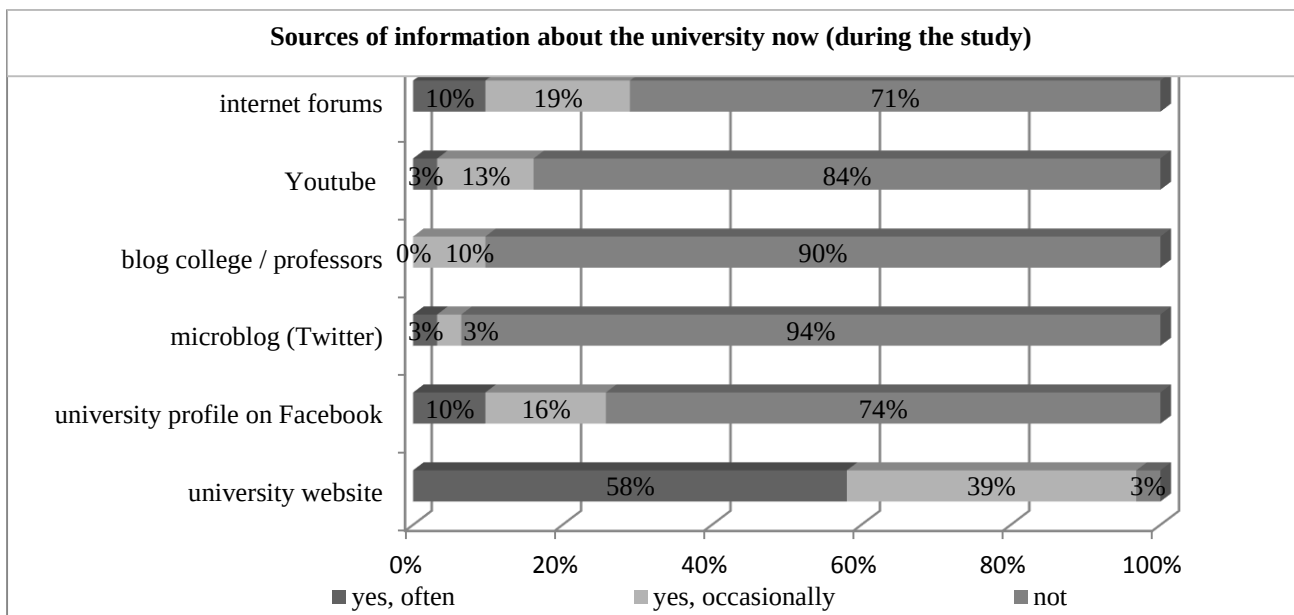
The main source of information from which the youth gathered information on the university prior to study was, in the first place, the website, followed by friends and university folders. Social media was used by 10% and 11% of respondents visited forums (Figure 2).



Source: own study

Figure 2 Sources of information about the university before the study

Students then determined the Internet sources of information about the university which they use already being students. Still, the primary source of information is the website, in the second place, Facebook, but the group is much smaller - 10% visit it often, and 16% occasionally. The third source are online forums. However, in the case of forums, the open question "what forums do you use?", respondents indicated that they were not university forums but unofficial forums created by students. Low interest in blogs may be due to the fact that universities do not have official blogs, also many teachers have blogs for students. (Figure 3)



Source: own study

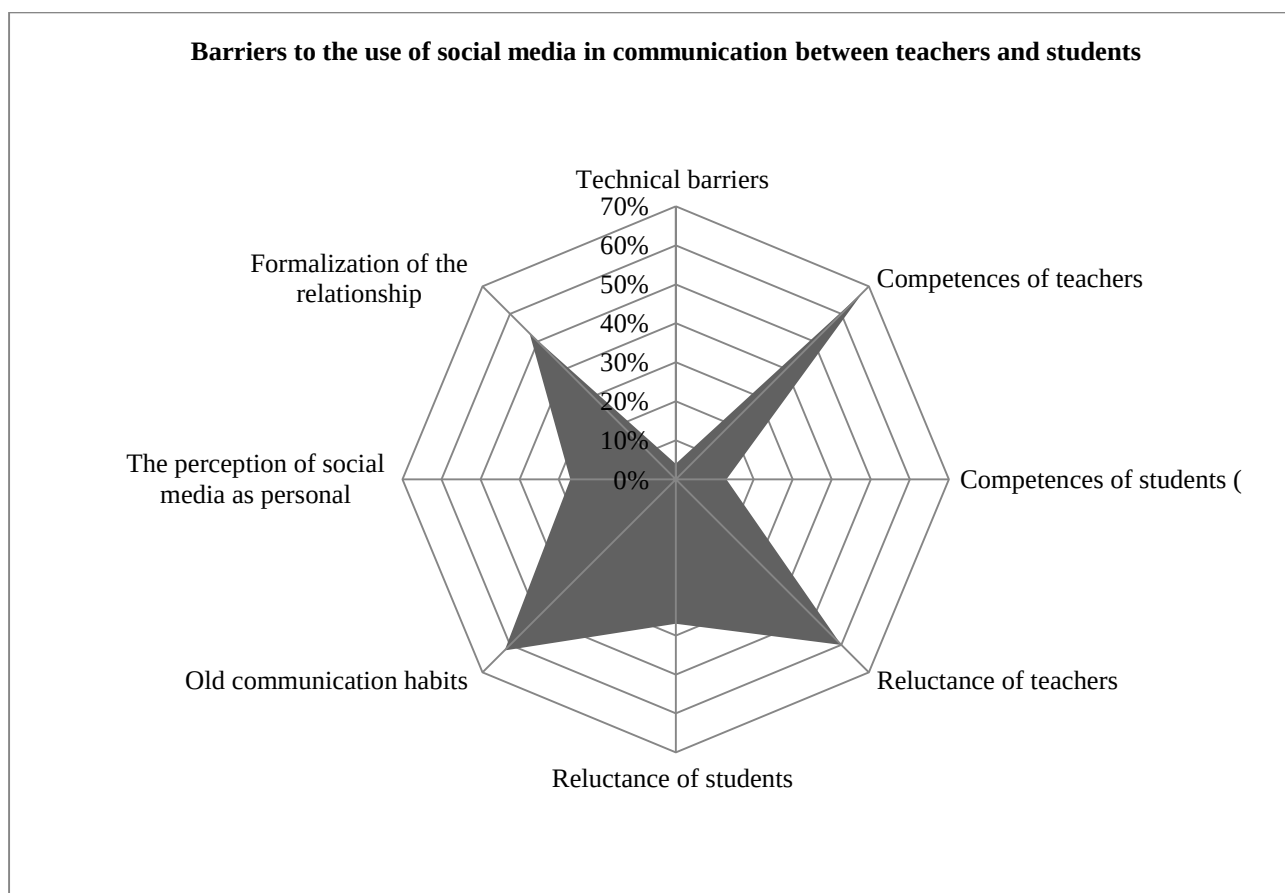
Figure 3 Sources of information about the university now (during the study)

People who look at their university Facebook, overwhelmingly (96%), only read the entries without showing their own activities.

Since universities offer services which, by their nature, are immaterial the perception of university is much influenced by students' contact with lecturers, hence, students were asked whether faculty teachers use social media in the process of communication. In most cases, the response was negative (88%). When asked about barriers to the use of social media in such communication, students frequently pointed to old communication habits of faculty teachers, their low social competence in the field of media and reluctance on the part of faculty teachers.

Barriers to the use of social media in communication between teachers and students (identified barriers are described on the basis of an earlier survey of students) (Figure 4):

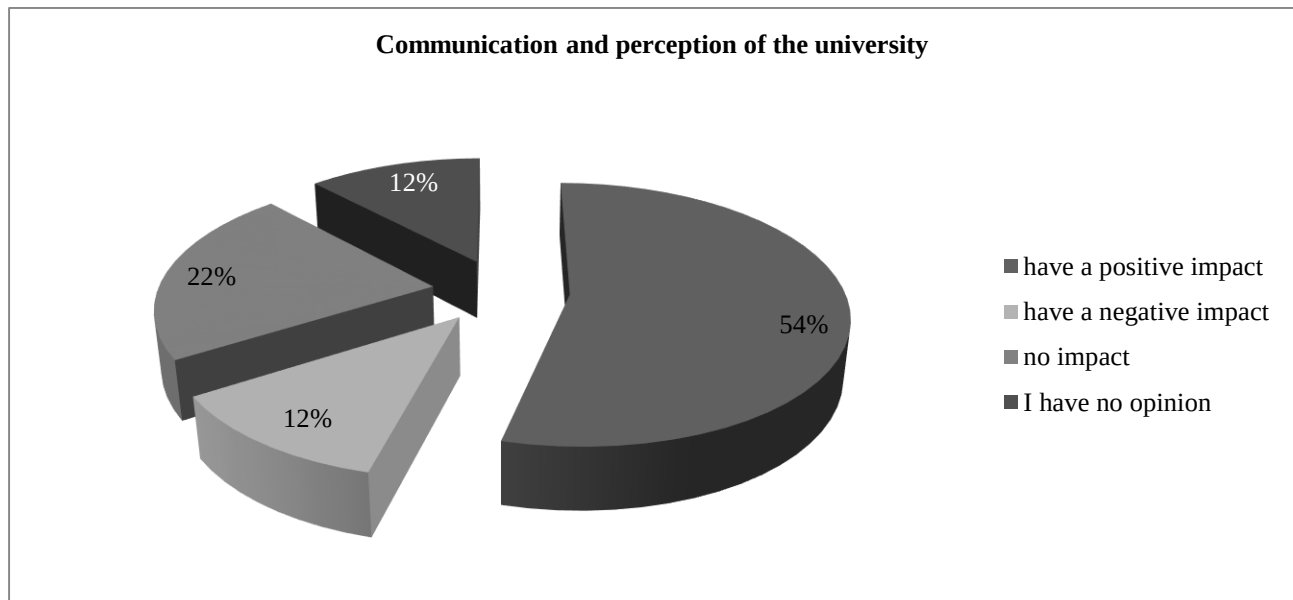
1. Formalization of the relationship (53%) - a high degree of formalization of mutual contact between lecturers and students.
2. Competences of teachers (68%) - lagging behind technological change on the part of teachers, insufficient skills in the use of new communication channels.
3. Competences of students (13%) - lagging behind technological change on the part of students, insufficient skills in the use of new communication channels.
4. Old communication habits (62%) - fixed old habits of faculty teachers, old habits among teachers.
5. The perception of social media as personal (27%) - for students social media are a personal, private communication channel with their friends.
6. Technical barriers (4%) - lack of adequate equipment, software.
7. Reluctance of teachers (60%) to use this type of communication with students.
8. Reluctance of students (37%) - a negative attitude on the part of students to use this type of communication with lecturers.



Source: own study

Figure 4 Barriers to the use of social media in communication between teachers and students

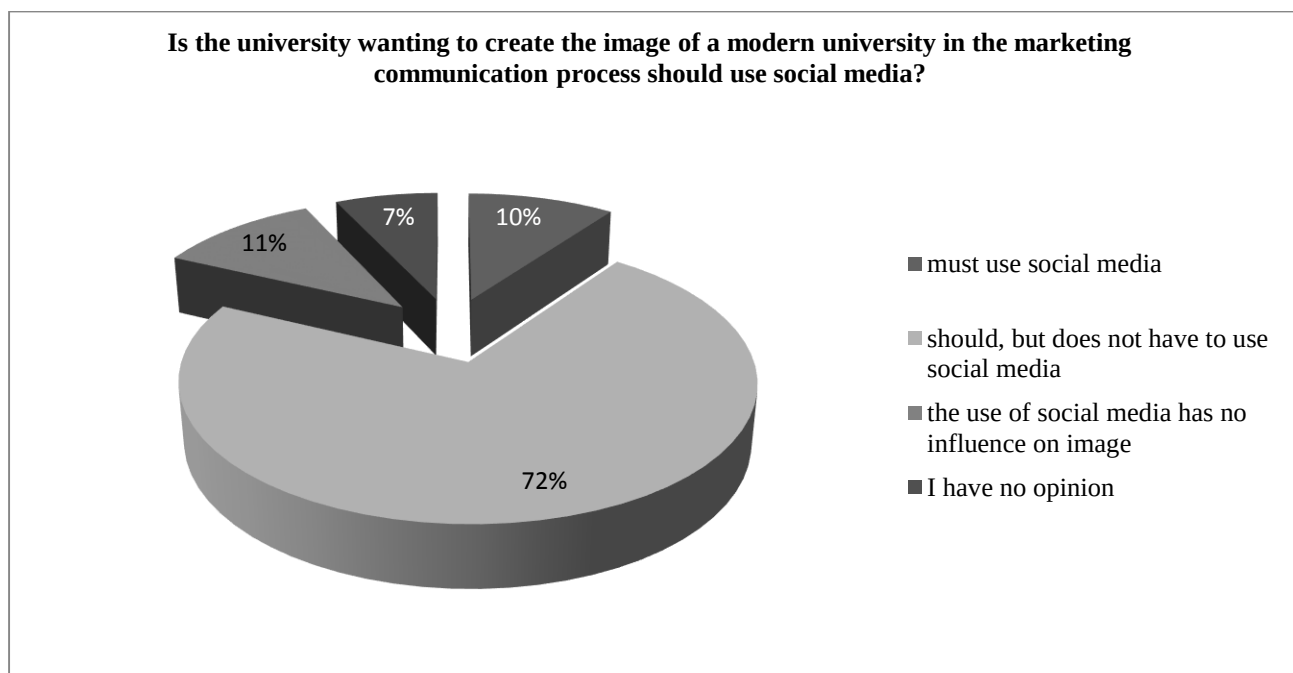
Then in the survey asked of students – “Do you think that increasing the use of social media in communication may have impact on the image of the university?”. The introduction of social media as a communication tool between teachers and students might, as students think, have a positive effect (54%) on the perception of universities (Figure 5). Students see blogs of faculty teachers as most welcome tools, to a lesser extent they would like to use Facebook.



Source: own study

Figure 5 Communication and perception of the university

Although students still rarely go to university profiles in social media, the vast majority believe that universities, in order to have modern images, should use them to communicate with recipients – 72% (Figure 6).



Source: own study

Figure 6 Social media and image of the University - student reviews.

Only 11% of students do not see the relationship between social media and the image of the university.

Conclusions

University images are largely determined by the way we communicate about the condition of the organization. Changing the characteristics of Generation Y requires matching channels and forms of communication to the group. Communication management in social media in shaping university images is so complex that the new media, as McQuail claims, are in fact "a collection of distributed communication technologies" (McQuail 2000). These distributed communication technologies are increasingly convergent in a single device and, going further, in one place - the Internet. The development of Web 2.0 entails a change in culture and communication, requires new skills but also new strategies for communicating with recipients. Polish universities are aware of the importance of social media in the lives of Generation Y and use them more widely. Facebook is now the most common channel used by universities, activities there are conducted in a professional manner. Still, low is the involvement of young people in the co-creation of its content. In the process of selecting universities by the youth, university profiles in social media almost do not matter. In contrast, great importance is attributed to images. However, the question: "whether universities wishing to have modern images should use social media?", was answered positively by the overwhelming majority. In the case of students currently studying at universities, the website is still the main source, although 26% also have a look at social media. Social media, however, are not a popular way of communication between teachers and students, and students see reasons for that in the barriers on the part of lecturers.

According to the author, universities should bet on greater activation of students in the creation of the content in social media, so as to clearly distinguish university profiles from websites. Such a co-creation will increase the level of identification with universities and contribute to a better image creation. However, the management of marketing communication in the Web 2.0 environment should be preceded by an analysis of the needs and expectations of young recipients. Social media have the feature that, creating a "community", e.g. on Facebook, needs to be voluntary in nature. Top-down forcing the use of these communication platforms, from the point of view of image management, does not make much sense, it does not meet the requirements for creating "communities" based on participation. Social media also change another issue, when it comes to image management - negative opinions can spread rapidly through networks, and this is the need to pay more attention to relationship marketing, stakeholder satisfaction and monitoring public opinion. The old saying that "images are created for years and can be destroyed in a moment" becomes valid in this situation.

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The Perception of Electronization and Data Boxes of the Czech Republic Administration by SMEs – truth or myth about the effectiveness in 2015?

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Abstract

Purpose of the article The post-modern global society relies heavily on e-forms on both private and public levels. The Europe 2020 follows this approach, while underlying the role of SMEs. The Czech government and legislature declared that the electronization of the public administration increases the efficiency, effectiveness and user friendliness. However, a multi-source research and its critical and comparative assessment yields rather unexpected results.

Methodology/methods In order to collect sufficient information for this not yet scientifically examined field, a myriad of sources needs to be researched, and collected primary and secondary data needs to be assessed by Meta-Analysis. The research needs to be qualitative, targeting explanatory information, and quantitative, targeting content analysis and measurable data. A part of data yielded from questionnaires completed by representatives of SMEs will be exposed to HOS method in order to indentify weaknesses of the current system.

Scientific aim The leitmotif and cornerstone is to determine and explain the perception of electronization and the employment of data boxes and tax data boxes by Czech SMEs. The final objective is to identify the (dis)advantages of the newly introduced e-system and to suggest improvements.

Findings The research results generated by the critical and comparative analysis leads to an appreciation of the point of view of SMEs regarding the e-public administration and employment of data boxes and tax data boxes. Use of IS/IT is not unanimously convenient and advantageous, with winners and losers and the official proclamations don't fit with the reality.

Conclusions SMEs show a small enthusiasm regarding the Czech e-public administration in the tax field. Their concerns are overlooked, their objections underplayed. An improvement would be doable, provided the Czech state and administration would respect more SMEs and consider them to be partners, i.e. subjects and not mere objects for testing modern IS/IT on.

Keywords: Meta-Analysis, electronization, data box, public administration, IS/IT

JEL Classification: H21, M15, O32.

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Introduction

The post-modern society is marked by globalization, virtualization and very intense competition. This implies a high importance and strong reliance on the information system and information technologies („IS/IT“) on e-forms on both private and public levels. The post-Lisbon EU is well aware about it and its strategy for growth, Europe 2020 Strategy („Europe 2020“), vigorously endorses the employment of IS/IT by the EU and member state institutions as well as by individuals and legal entities. Naturally, the small and medium sized enterprises („SME“) are fully included in these policies and initiatives, they are perceived as the engine for innovation, employment, economic growth, and social integration of the society (Hodinková, 2013). However, how does this really work in the practical life? The effectiveness and efficiency of one of the flag ship projects in this respect, the use of data boxes by the Czech tax administration, deserves an assessment by the ultimate addressees, i.e. Czech SMEs.

The key statute is the Act No. 300/2008 Coll., on electronic acts and authorized conversion of documents („Act on e-acts“), which took effect on 1st July, 2009 and which sets the subjective legal duty for certain subjects to establish data boxes and use them for the communication with Czech public administration organs and institutions („Czech public administration“). Other subjects are free to decide, i.e. they can, but do not need to, establish data boxes and use them for their communications with the Czech public administration.

As of 1st January, 2015, the subjects who had to use data boxes for their communications with the Czech public administration have received another duty by the operation of Art. 72 al. 4 of the No. Act 280/2009 Coll., Tax Order („Tax Order“), i.e. owners of data boxes must communicate with all tax authorities of the Czech public administration only electronically while using their data boxes. If a subject who has to have a data box does not use it for its communication with tax authorities, then a financial fine can be imposed.

According to the Art. 69 of the Act No. 280/2009 Coll., Tax Order, the tax authority can establish *ex officio* for owners of data boxes a special e-folder with a distance access, called the tax information box. Hence the owner of a data box can access and see its e-file maintained by the tax authority.

An inquiry study was performed in this respect and brought new light, if not directly a new perspective, in this important arena. An additional search of secondary data and Meta-Analysis of all information leads to a set of rather semi-conclusions inviting to extend researches and studies in this field.

1 Goals, hypotheses, methods

The main goal in all fields of science is the establishment of theories, theoretical concepts and the formulation of the so called *cumulative knowledge* (Schmidt, 2014). This article is not an exception, and the cumulative knowledge is proposed to be established in the particular arena of data boxes and their perception by Czech SMEs within their legal setting. The involvement of not only economic aspects, but also legal requests to move from the axiomatic methodology to argumentative, from induction to deduction (Matejka, 2013).

The 1st goal of this article is an analytical description and critical assessment of the setting of data boxes for the performance of the Czech public administration while focusing on the perspectives of Czech SMEs. The Act on e-acts sets the subjective legal duty for certain subjects to establish data boxes and use them for communications with the Czech public administration. The Tax Order requires the compulsory use of data boxes by their owners in the communications with the Czech tax authorities and provides that tax information boxes should be established for these owners of data boxes. Methodologically, the 1st goal is to be achieved by a descriptive scanning analysis of legislative texts and academic articles and other published information. Boldly, the static setting needs to be fully understood before the next questions emerge and are answered, such as whether this setting is appropriate, legitimate and reasonable and/or beneficial for SMEs and how it works in real life, according to a relative homogenous group of addressees.

Well, the general assessment, done predominantly based on secondary data in order to address the 1st goal, leads to the 2nd goal to be addressed, predominantly based on primary data. Namely, the investigation done by the questionnaire inquiry evaluated by categorical data analysis. The respondents were individuals and legal entities, often SMEs, and the underlying leitmotif was to figure out whether they perceive rather positively or negatively their mandatory e-communication via data boxes with the financial authority, especially if it is a helpful instrument or rather another unwelcome burden imposed by the bureaucracy. All respondents were from the capital town, Prague, and the questionnaire included 5 closed questions and 5 semi-closed questions. All questions were so phrased in order to obtain data to confirm or reject the following 4 hypotheses.

The 1st hypothesis („H1“) assumed that subjects which do not have the duty according to the law to establish a data box will opt to do so according to their age. In other words, certain age groups of subjects not ordered to have a data box will be more eager to opt to establish it than other age groups.

The 2nd hypothesis („H2“) assumed that subjects who have the duty according to the law to establish a data box will welcome their e-communication via a data box with tax authorities.

The 3rd hypothesis (“H3”) assumes that subjects which do not have the duty according to the law to establish a data box and which still opt to establish a data box, that they will welcome their e-communications via data boxes with tax authorities.

The 4th hypothesis (“H4”) assumes that subjects with a data box will as well use the tax information box.

These 4 hypotheses were set based on an expert search of public opinion, they were assessed via questionnaire answers and analysis categorical data. Complementary to this inductive process, a comparatistic as well as a moderate deduction of external patterns and presented trends were employed. Naturally, the Meta-Analysis (Schmidt, 2014) was used in general, and Hardware, Orware, Software (“HOS”) method was used for effectiveness (Koch, 2013). Boldly, the general preference for qualitative methods does not imply per se that these are superior and that the quantitative methods should be suppressed or even avoided (Silverman, 2013). A truly well founded cumulative knowledge needs both.

2 The object of the perception – the data box as an instrument for e-communication

The data box is directly regulated within the Czech legal system since 2009, when there took effect the Act on e-acts, which defines it in the Art. 2 as a special e-storage designated for the delivery of e-documents between Public administration authorities on one side and individuals or legal entities on the other side.

A data box is an individualized part of the IS which is allocated to a certain user and which allows for sending e-documents in other data boxes (Budiš, 2010). These documents are called data messages, and they can be sent, received and otherwise proceed through data boxes. They are similar to e-mail services. However, unlike the IS regarding e-mails, the IS of data boxes cannot be considered as a compatible system. Namely, the IS of data boxes is an autonomous, protected and by the state guaranteed system which allows only internal communications between data boxes (Korbel, 2009). Thus, it is impossible to send or to receive an email or other document through a data box and at the same time it is possible to unambiguously identify and authenticate users and to learn whether and when they read the message, i.e. they open the digital document delivered to the data box. Allegedly, the authentication capacity is one of the main advantages of data box operation, but according to certain experts this is the greatest weakness (Smejkal, 2010). Undoubtedly, the security is a true issue inherently linked to the data boxes, and it is definitely not the only issue ... Boldly, data boxes have been heavily scrutinized by the professional as well as laic public and they do not benefit from a unanimous and eager endorsement by all users, and subjects in general.

Considering subjects, several types of data boxes can be distinguished. Firstly, there are data boxes of individuals, i.e. of natural persons. Each natural person with the full legal capacity, and regardless of the citizenship or domicile, has the right on the establishment of one data box within three days from filing the request and free of charge. The law distinguishes between natural person entrepreneurs and other natural persons. The rule is that each natural person has the right on the establishment of one data box. The exception to this rule allowing additional data box is set for attorneys at law, tax advisers and insolvency administrators, i.e. these professionals must have their “own” data box since 1st July, 2012, and they can have an additional box for their profession. It is important to underline that natural persons not entrepreneurs, i.e. individuals not conducting business, do not have any duty to let establish and use a data box and they are free to do or not to do so. Naturally, except attorneys at law, notaries, private enforcement agents - executors, tax advisers and insolvency administrators.

Secondly, there are data boxes of legal entities, i.e. artificial legal persons. A data box is mandatorily established for all legal entities registered in the Public Register. Other legal entities, i.e. entities not registered in the Public Register, are free to opt or not to opt to let establish for them a data box. Thus civic associations, churches and religious organizations, colleges and other not registered entities can, but do not need to, have a data box. Again, the rule is that each legal entity has the right on the establishment of one data box, regardless of the number of its branches and offices persons. Thus the internal setting of the legal entity is irrelevant and everything needs to be done through one single data box.

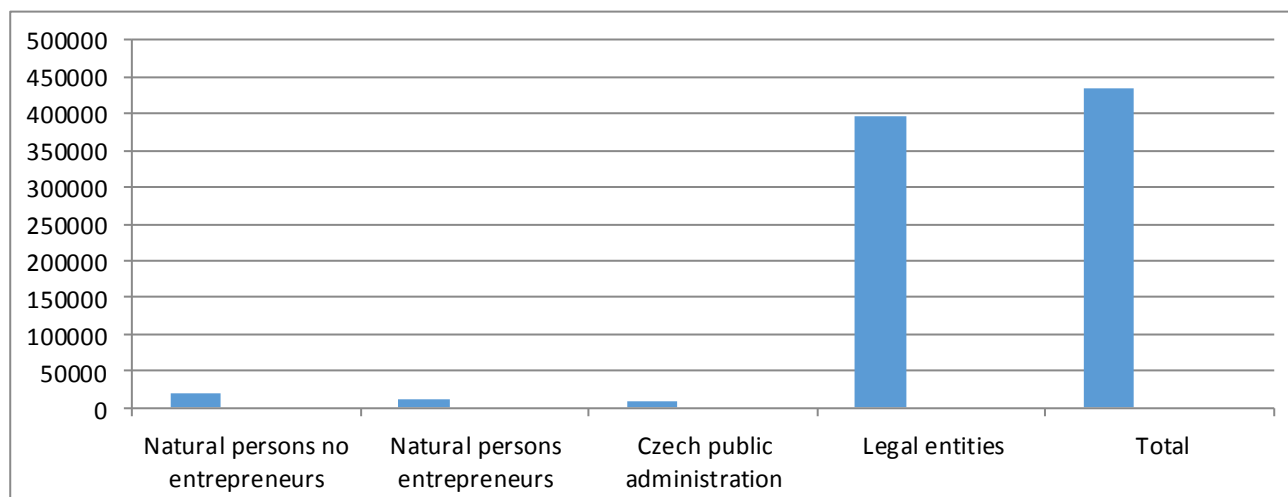
Thirdly, there are data boxes of Czech public administration. A data box is automatically established for each organ or institution belonging to the Czech public administration and this regardless whether such an organ or institution has a legal personality or is a mere organizational part or branch of the state. If the Czech public administration is a natural person, then a data box is established for such a person for public administration activities. If such a person asks, then there can be established an additional data box for private activities. Such a person can as well ask for the merger of these two data boxes, so the person does not have to administer two data boxes. Pursuant to the original version of the bill, each organ or institution of Czech public administration should have to have one data box, but due to negative feedback and comments during the legislative process, the enacted versions of the Act on e-acts allows the request for more data boxes for one organ or institution of the Czech public administration. Currently, a number of organs of the Czech public administration use an internal e-system to manage data, files and folders, so called Data Management System (“DMS”) which is compatible and interlinked with data box system. The co-existence of the DMS and data boxes has been analyzed for the last five years (Vlček, 2011) and the first author of this article has direct and current experience with it. Namely, she can confirm that DMS and data boxes properly interact, but she adds that consumer friendliness as well as several other aspects of DMS are at least arguable, and not all public administration employees are enthusiastic DMS users.

Table 1 Overview of subjects based on the duty to require the establishment of the data box

Subject	Duty to require the establishment of the data box
Natural person, entrepreneurs or not	Not set by the law
Attorneys at law, private enforcement agents, notaries public, insolvency administrators, tax advisors.	Set by the law
Legal entities not registered in the Public Registry.	Set by the law.
Legal entities not registered in the Public Registry, e.g. foundation.	Not set by the law
Czech public administration.	Set by the law.

Source: Own, i.e. prepared by authors.

The below Figure 1 demonstrates the types of data boxes established during the period 2012-2014. In total, 434 012 data boxes were established. Only 18 581 of them were established for natural persons no entrepreneurs and 11 352 for natural person entrepreneurs. Interestingly even fewer data boxes were established for the Czech public administration, namely 8 673. Thus the big bulk of data boxes was established for legal entities, i.e. 395 406.



Source: Own, i.e. prepared by authors based on data provided by the the Ministry of Interior of the Czech Republic

Figure 1 Number of data boxes established in 2012-2014 (natural persons no-entrepreneurs, natural person entrepreneurs, Czech public administration, legal entities, total)

3 Electronic communication with tax authority and tax information box

On 1st January 2015, there took effect the provision of Art. 72 al. 4 of Tax Order which directly regulates the duty of the tax subject, i.e. the tax subject which has a data box has to carry the e-communication with the tax authority. Pursuant to the Art. 72 al. 4 of the Tax Order, if the subject or its representative has a data box or has a duty by the law to have their final accounts verified by an auditor, his or her submissions need to be done only via the data message in the format and structure published by the tax administrator and in the set manner.

Pursuant to the Art. 71 of the Tax order, the submission of all applications for registration, of information about the change of registration data, of regular tax returns as well as additional tax returns can be done in three ways. Firstly by the signed message with the acknowledged e-signature. Secondly, by the message via a data box. Thirdly by the verified identity of the applicant in the manner, which allows the access to the data box.

In the case of a subject which has a data box, it will be always the form of e-communication. However this e-communication does not need to be exclusively done via the data box. The duty set by the Tax Order is satisfied as well when the communication is done by e-message with the acknowledged e-signature or by an e-message with the verified identity of the applicant in the manner which allows the access to the data box. Nevertheless, for the e-communication are generally preferred data boxes.

Legal entities have to submit electronically their tax returns regarding the VAT, summary reporting and evidence transcripts for tax purposes in the case of the transfer of the tax duty. It can be suggested that for legal entities, the newly set duty to communicate with the tax administrator electronically should not be burdensome or technically difficult, as it may be for natural persons opting for the establishment of the data box or for attorneys at law, notaries public, private enforcement agents, tax advisors or insolvency administrators.

Further the Tax Order, in Art. 69, directly regulates the possibility that the tax administrator, if the appropriate technical equipment is available, puts information collected in the file and on the personal tax account of the subject for the distance access, in the extent and segregation as they are collected in the information data box of the subject.

The data information box according to the Tax Order does not mean a data box according to the Act on e-acts. Each of these boxes serves completely different purposes and functions on a different principle. The data box is used for the delivery of official documents, while the tax information box is used to allow a distance access, i.e. to see without moving the content of the tax file of the particular subject. Thus, the use of the tax information box is limited to tax administration and its main purpose is to provide information about tax facts related to the particular subject. The tax information box informs about the status of the personal tax account and personal tax calendar of the taxpayer for whom the tax information box was established. The tax information box includes also data about all types of taxes which are covered by the competency of various tax administrators. Thus all information about one taxpayer are concentrated by one single tax administrator and this tax administrator is also the establisher and administrator of the tax information box and even the “updater” of the data included in the tax information box.

The tax information boxes are automatically established for subjects having the data box, regardless whether they have the data box mandatorily or per choice. For the access to the tax information box, it is newly possible to use as well the log-in to the data box. Thus, for the log-in into the tax information box which was established automatically, the subject must first ask the competent tax administrator to provide the access data. The competent tax administrator is determined based on the domicile or place of business of the subject. In addition, the subject needs for the access to the tax information box as well the acknowledged e-signature. This is definitely a limiting factor causing the decrease of subjects using or potentially using data boxes. The e-format of the application to access and to see the content of the tax information box is available within the software application EPO.

Subjects not having a data box, and thus for which the tax information box was not automatically established, must, if they want to have the data information box, request the establishment of the data information box via their tax administrator while using a special request e-form, i.e. via a data message with the acknowledged e – signature.

4 Questionnaire inquiry about perception and use of data boxes and tax information boxes

Based on the performed questionnaire inquiry and its following assessment through categorial data analysis, the four above mentioned hypotheses were scrutinized and evaluated. The questionnaire inquiry was performed by sending questionnaires electronically to four groups of respondents and these groups were set as follows:

- natural persons without data boxes;
- natural persons which have compulsorily established data boxes;
- legal entities which have compulsorily established data boxes;
- natural persons which freely opted for the establishment of data boxes.

The questionnaire included two sets of questions, i.e. five close questions and five semi-close to confirm or reject hypotheses.

4.1 Questionnaire inquiry – results regarding H1

The H1 assumed that subjects which do not have the duty according to the law to establish a data box will opt to do so according to their age.

H1 - newly set duty for subjects which must have a data box to communicate with tax administrator electronically will increase by these subjects, which do not have to have data boxes, the interest to establish a data box and this depending upon their age.

H0 – between indicated signs there does not exist dependency, i.e. the newly set duty for subjects with data boxes to communicate with the tax administrator electronically will not increase the interest by other subjects to establish a data box based on their age

In total 50 questionnaires were sent to each of the above four groups, i.e. 50 questionnaires to individuals without data boxes, 50 questionnaires to individuals which must have data boxes, 50 questionnaires to legal entities which must have data boxes and 50 questionnaires to natural persons freely opting for data boxes.

The completed questionnaires were collected during a period of two months and all of them were returned, i.e. the returned rate reached 100%. This return was achieved by the motivation, namely as a consideration for a completed and

returned questionnaire, there was provided an information material about the duty newly set by the Art. 79 al. 4 of the Tax Order. The collected data was assessed by the categorical data analysis while employing the software program STATISTIKA. The level of importance was set as $\alpha=0,05$. In order to assess the collected data, the statistical method of dependency of the quantitative signs of the Pearson's chi square test was used. The conditions for the employment of the Pearson's chi square test were met ($n>40$).

Table 2 Contingency table for H1

Age of natural person without established data box	Increase of the interest to establish a data box Yes	Increase of the interest to establish a data box No	Total
25 - 34 years	3	17	20
35 - 44 years	5	10	15
45 years and over	2	13	15
Total	10	40	50

Source: Own processing

The value of Pearson's chi square test is $X^2 = 0,357$. The level of significance is $\alpha=0,05$ and thus. $X^2_{0,05(1)} = 3,841$. Considering the value $X^2 < X^2_{0,05(1)}$, H_0 – zero hypothesis is confirmed. Therefore, there is no dependency between the indicated signs. In other words, the newly set duty for subjects with the established data box to communicate with the tax authority electronically, does not increase the interest to establish a data box by subjects without established data box based on their age.

4.2 Questionnaire inquiry – results regarding H2

The H2 assumed that subjects who have the duty according to the law to establish a data box will welcome their e-communication via a data box with tax authorities.

H2 – the newly set duty for subjects with established data box to communicate with the tax authority electronically is perceived by these subjects, i.e. subjects with established data box, positively.

H0 – between indicated signs there is no dependency, i.e. the newly set duty for subjects with data boxes to communicate with the tax administrator electronically is not perceived by these subjects positively.

Table 3 Contingency table for H2 - individuals

Natural persons with mandatorily established data box	The set duty is perceived positively Yes	The set duty is perceived positively Not	Total
Attorneys-at-law	15	5	20
Private enforcement agents	20	10	30
Total	35	15	50

Source: Own processing

The value of Pearson's chi square test is $X^2 = 0,3968$. The level of significance is $\alpha=0,05$ and thus. $X^2_{0,05(1)} = 3,841$. Considering the value $X^2 < X^2_{0,05(1)}$, H_0 – zero hypothesis is confirmed. Therefore, there is no dependency between the indicated signs. In other words, the newly set duty for subjects-individuals with the established data box to communicate with the tax authority electronically is not perceived by these subjects positively.

Table 4 Contingency table for H2 – legal entities

Legal entities with mandatorily established data box	The set duty is perceived positively Yes	The set duty is perceived positively Not	Total
Up to 20 employees	15	5	20
20 and more employees	23	7	30
Total	38	12	50

Source: Own processing

The value of Pearson's chi square test is $X^2 = 0,018$. The level of significance is $\alpha=0,05$ and thus. $X^2_{0,05(1)} = 3,841$. Considering the value $X^2 < X^2_{0,05(1)}$, H_0 – zero hypothesis is confirmed. Therefore, there is no dependency between the indicated signs. In other words, the newly set duty for subjects-legal entities with the established data box to communicate with the tax authority electronically is not perceived by these subjects positively.

4.3 Questionnaire inquiry – results regarding H3

The H3 assumed that subjects which do not have the duty according to the law to establish a data box and which still opt to establish a data box, that they will welcome their e-communications via data boxes with tax authorities.

H3 – the newly set duty for subjects with established data box to communicate with the tax authority electronically is perceived by these subjects, i.e. subjects with established data box, positively in the dependence upon their age.

H_0 – between indicated signs there is no dependency, i.e. the newly set duty for subjects with data boxes to communicate with the tax administrator electronically is not perceived by these subjects positively in the dependence upon their age.

Table 5 Contingency table for H3

Age of natural person without established data box	Increase of the interest to establish a data box Yes	Increase of the interest to establish a data box No	Total
25 - 34 years	5	15	20
35 - 44 years	10	14	24
45 years and over	2	4	6
Total	17	33	50

Source: Own processing

The value of Pearson's chi square test is $X^2 = 0,6778$. The level of significance is $\alpha=0,05$ and thus. $X^2_{0,05(1)} = 3,841$. Considering the value $X^2 < X^2_{0,05(1)}$, H_0 – zero hypothesis is confirmed. Therefore, there is no dependency between the indicated signs. In other words, the newly set duty for subjects-legal entities with the established data box to communicate with the tax authority electronically is not perceived by these subjects positively in the dependence upon their age.

4.4 Questionnaire inquiry – results regarding H4

The H4 assumed that subjects with a data box will as well use the tax information box.

H4 – the subjects which mandatorily must have a data box, i.e. subjects with mandatorily established data box, will use the tax information box.

H_0 – between the indicated signs does not exist dependency, i.e. the subjects with data boxes will not use the tax information box.

Table 6 Contingency table for H4 - individuals

Natural persons with mandatorily established data box	They will use the tax information box Yes	They will use the tax information box No	Total
Attorneys-at-law	6	20	26
Private enforcement agents	8	16	24
Total	14	36	50

Source: Own processing

The value of Pearson's chi square test is $X^2 = 0,651$. The level of significance is $\alpha=0,05$ and thus. $X^2_{0,05(1)} = 3,841$. Considering the value $X^2 < X^2_{0,05(1)}$, H_0 – zero hypothesis is confirmed. Therefore, there is no dependency between the indicated signs. In other words, the newly set opportunity for subjects-individuals with mandatorily established data to have a tax information box is not attractive and mentioned subjects do not plan on using their tax information box.

Table 7 Contingency table for H4 – legal entities

Legal entities with mandatorily established data box	They will use the tax information box Yes	They will use the tax information box No	Total
Up to 20 employees	12	7	19
20 or more employees	25	6	31
Total	37	13	50

Source: Own processing

The value of Pearson's chi square test is $X^2 = 0,037$. The level of significance is $\alpha=0,05$ and thus. $X^2_{0,05(1)} = 3,841$. Considering the value $X^2 < X^2_{0,05(1)}$, H_0 – zero hypothesis is confirmed. Therefore, there is no dependency between the indicated signs. In other words, the subjects-legal entities with mandatorily established data box will not use the tax information box.

5 Discussion

Based on the performed questionnaire inquiry, collected results and their assessment through the method of the dependency of quantitative signs of Pearson's chi square, the following semi-conclusions are to be presented.

H1 – the zero hypothesis is confirmed. Thus there is no dependency between signs, and the newly set duty for subjects with established data box for communication with the tax authority electronically does not increase the interest of subjects without a mandatorily established data box to have such a data box in the dependency upon their age. It appears that individuals which are not ordered by the law to have a data box, and who freely decide to get such a data box, that they use it predominantly only for the reception of data messages, possibly as well for sending messages. They perceive the data box as an instrument for improvement of quality of services, because in the majority of cases, thanks to the data box, there is no more need to go to the post office. However, a problem emerges when these subjects use other services which require IT knowledge and support and installation of certificates to their computers or other e-devices. Vis-a-vis these facts, their motivation to establish additional elements related to the use of the electronic support of data boxes (such as e-signature, authorized e-signature) decreases.

H2 – the zero hypothesis is confirmed. Thus there is no dependency between signs and the newly set duty for subjects with established data boxes to communicate with the tax authority electronically is not perceived positively. This applies to both, individuals as natural persons as well companies, corporations, etc. as legal entities. In the case of individuals, this is caused predominantly by the fact that the new manner of electronic communication requires a very good knowledge of IT support. In the case of legal entities, this situation is caused by the fact that, currently, legal entities are already administratively overburdened and encumbered by constant changes to be implemented in the business conduct, which is time-consuming and otherwise inconvenient.

H3 - the zero hypothesis is confirmed. Thus there is no dependency between signs, and the newly set duty for subjects with an established data box for communication with the tax authority electronically is not perceived by these subjects as positive in the dependency with their age structure. It is necessary to repeat and underline the facts, arguments and semi-conclusions indicated above regarding H1. If individuals decide to establish and use a data box, they will predominantly use it only to receive or send data messages. They perceive it as an improvement in the quality of services, because trips and dealing with the post office are generally eliminated. However, there arises a problem when these subjects should use other services which require IT knowledge and support and installation of certificates to their computers and other e-devices. At this point, the motivation for the establishment of additional elements related to the use of the electronic support of data boxes (such as e-signature, authorized e-signature) decreases.

H4 - the zero hypothesis is confirmed. Thus there is no dependency between signs and subjects with established data boxes will not use the tax information box. This lack of interest to use the tax information data box is shared by both individuals and legal entities. The tax information box is a completely new legal instrument, unknown to subjects and potential users. Thus it can be suggested that there is a low awareness about benefits of the tax information box and the scenery as shown in the light of H1 – H4 can change, perhaps even dramatically change, over time, based on the reduction of the information deficit. Thus, it might be extremely instructive to conduct a similar questionnaire inquire in the near future.

Further, it is worthy to focus in on this, so-far, missed opportunity (hopefully not still-born project) not only from the perspective of Czech addresses but as well within a more complex and global setting. It cannot be stressed enough, that Europe 2020 is a vigorous proclamation of seven priorities enjoying a strong support of EU institutions, perhaps the strongest one by the pro-integration tandem, the European Commission and Court of Justice of the EU (Burley, 1993). Namely, Barroso's Commission indicated between the famous seven flagship initiatives to stimulate progress A digital

agenda for Europe and Resource efficient Europe while stressing the importance of SMEs and the need to support them (European Commission, 2010).

Well, it seems that once again a disharmony of opinions is taking place and the information, strategy and preferences above do not get properly implemented, with all related consequences (MacGregor, 2014b). A well thought-through idea, reportedly in favor of SMEs, is ignored, or even despised and vilified by them. In the postmodern information society and in the EU, where the bottom-up approach is „in“, the current status of the perception of electronization, data boxes and tax information boxes by Czech subjects, especially Czech SME, is not reconcilable with Europe 2020 in general, and particularly even with very Czech national interests.

At the same it would be remiss not to mention that not only the level of information deserves a close critical scrutiny. As a matter of fact, the form of the electronization initiated and imposed by the public power can be questioned, regarding the legitimacy as well as the technical suitability. Namely, the disequilibrium of IS/IT leads to a low efficiency as demonstrated by HOS method (Koch, 2013) and Czech SMEs intuitively understand it and act accordingly. Thus Czech SMEs are rather reluctant to data boxes and tax information boxes. Naturally, a better communication and both-ways communication between the public and private sector, simplification and increase compatibility of imposed IS/IT and generally the internationalization process of Czech SMEs (Zapletalová, 2014) can significantly improve and ameliorate the deplorable status quo. A comparatistic and inspiration from other EU member states could be beneficial as well. Boldly, further measures in favor of SMEs are needed and this was even already established for sister-issues, such as tax planning (Hodinková, 2013). Czech SMEs cannot successfully and effectively plan in the current setting and the computer based content analysis and other instruments and methods can help (Kovářiková, 2013), but they cannot offset unpredictable changes and e-requirements imposed in an authoritarian manner by the public power.

Conclusion

The current greatest challenge isn't a lack of information, but rather it's quantity, disorganization and reduced relevancy (MacGregor, 2012). Nevertheless, it is clear that, over time lately, the idea of a national society with strictly its own politics and economy has declined somewhat, and the conception of a single global society has grown in the context of the exponential spread of IS/IT (MacGregor, 2014a). Sociologists and other experts quarrel over the study of these trends, particularly on the meaning of society and the delimitation of mutual expectations in the global and European context (Shawn, 1994). Nevertheless, there is no dispute that, in our knowledge-based economy, the identification, processing and presentation of scientifically well founded information should be followed by an open minded discussion and by a willingness to genuinely and fairly appreciate and reflect presented suggestions and statements (MacGregor, 2014a). Naturally, the fundamental pillars and cornerstone values must remain intact, and without reaching a reasonably high level of awareness and endorsement of modern IS/IT projects and elements, no genuine progress can be achieved (MacGregor, 2014b). Currently, we encounter challenges caused by a set of crises, including the financial crisis of 2008 (Kovářiková, 2013) in the complex global setting. The expression of Jean-Claude Juncker, around his appointment, about the EU at the intersection seems appropriate and makes it even more important to get an active supportive engagement by SMEs.

The performed questionnaire inquiry and related assessment of the collected data and their Meta-Analysis while using a categorical attitude sadly confirmed the zero hypotheses and made it obvious that there is most definitely a negative perception of electronization and data boxes imposed by the Czech public administration on Czech SMEs. Data boxes were not welcomed by Czech subjects, especially not by Czech SMEs, and additional features and services related to them do not significantly change the original negative perception. The option to communicate electronically with the state administration and to have a distant e-access to own e-file by tax authority is good, but not good enough to offset related complications due to the IS/IT and general lack of information in this field. It seems that e-communication and e-business is done by SMEs via the Internet, emails, domains, social networks such as Facebook ... and there is not a large potential to expand these options, especially if this would be linked with extra costs and complications.

The EU and Czech Republic should be more realistic, perhaps listen more to SMEs and really follow what they proclaim, i.e. the famous bottom-up approach Or be just honest and admit to the citizens, especially taxpayers, that data boxes are done only in favor of the Czech public administration and that each taxpayer should contribute to it, i.e. data boxes are basically not for the benefit of SMEs, but instead for the convenience of the state. At least as such, they seem to be perceived now and the Czech Republic should address it. After all, the post-Lisbon EU should be more democratic, legitimate and closer to Europeans, should it not?

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Incomplete decision Trees as a formal tool to support decision making related to insolvency and bankruptcy problems

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Abstract

Abstract The article deals with the problem of insolvency and bankruptcy from debtor's point of view and his/her debts on the Czech Republic financial market. The company, which fell into a bankruptcy hearing, has several legislatively supported options how to deal with this situation and repay creditors money. Each of the options has been specified as a branch of a decision-making tree. Two methods of the tree evaluations are used, namely conventional method using already known probabilities acquired statistically from previous cases and by a heuristic - water probability. The heuristic generates all missing information items. The result is then focused on the comparison and evaluation of the best ways to repay the debt, also including solution for the future continuation of the company currently in liquidation and quantification of percentage refund of creditors claim. A realistic case study is presented in full details

Methodology/methods Solving within decision tree with already known probabilities and water probability.

Scientific aim Comparison and evaluation of the best ways to repay the debt, also including solution for the future continuation of the company currently in liquidation and quantification of percentage refund of creditors claim.

Findings Predictions of future actions in dealing with insolvency act and bankruptcy hearing, quicker and more effective agreeing on compromises among all creditors and debtor.

Conclusions Finding a best way and solution of repayment and avoiding of termination for both of interested parties (creditor and debtor).

Keywords: Insolvency, restructuring, decision – making tree, probabilities, creditors claim.

JEL Classification: G33, G34

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Introduction

On 1 January 2008 law no. 182/2006 Coll. came into effect - Bankruptcy and Its Resolution (Insolvency Act), which applies to resolving insolvency and impending bankruptcy of the debtor in the judicial proceedings. The text is analysing gradual decline of management with the calculation of possible options for the benefit of all interested potential creditors.

1 Decision – making tree

A decision tree is a method that can be used to make advance unpredictable choices, especially decisions that involve high costs and risks (Rafael Olivas, 2007). Decision trees use a graphic approach to compare competing alternatives and assign values to those alternatives by combining uncertainties, costs, and payoffs into specific numerical values.

The Advantages of decision trees are:

- It is shown graphically; the visual approach is beneficial for a more comprehensive solution to the problem.
- It is efficient when you can easily modify a decision tree as new information becomes available. Set up a decision tree to compare how changing input values affect various decision alternatives.
- It is revealing. You can compare competing alternatives even without complete information—in terms of risk and probable value.
- Also you can use decision tree in conjunction with other project – making tools (Rafael Olivas, 2007).

In case of determining the best possible solutions for the company's bankruptcy from debtors point of view was chosen tool of the decision tree. Tool was picked because of a clear visual approach of all the possibilities and determination the probability of possible variants, where it is possible to implement all pre – selected methods of calculation to get the above mentioned results.

1.1 Decision tree notation

Decision tree models include such concepts as nodes, branches, endpoints, strategy, payoff distribution, certain equivalent, and the rollback method.

Nodes are divided into root nodes, decision nodes and chance nodes (Magee, 1964). Root node, or also the first decision node, which is the beginning of decision tree and so represents a "first" decision, in the used decision tree the root node representing the entering into insolvency. Decision – making nodes represent a firm decision and they are plotted as the squares compare to **chance nodes** are plotted as small circles; they represent an event that can result in two or more outcomes. Each outcome from chance node has its own probability, the total of all outcomes for a given chance node must equal 100% (or 1.0). Lines that connect nodes are called **branches**. A branch that goes from a decision node (and towards the right) is called decision branches. Similarly, branches that outcome from a chance node (and towards the right) are called chance branches. Each branch can represent different kind of strategy of pre – selected decision. The branch can lead to any of the three node types: decision node, chance node, or endpoint. The **Endpoints**, also known as terminate points are plotted as triangles and represent the termination of the decision tree with exact result, that can be represent as payoff values. For example in case study is it shown as future possibility of refund of creditors' claims (in case study percentages stands for payoff values)

1.2 Decision node value

$$DNV = \max \{P_1, P_2, \dots, P_i\} \quad (1)$$

where P_i is the i -th profit

The formula (1) reflects common-sense reasoning of the decision maker – choose the variant which offers the highest profit.

1.3 Lottery node value

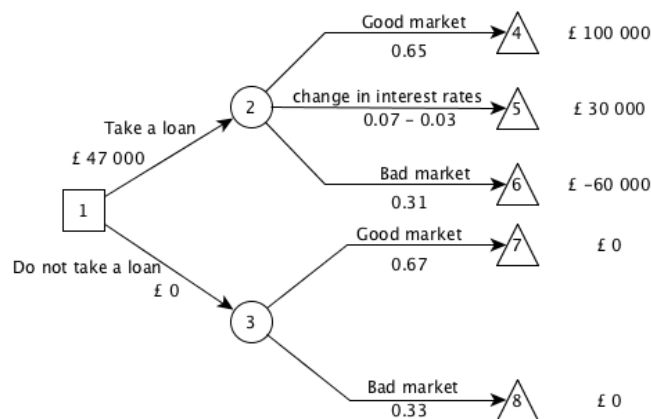
Each lottery branch has its probability p , and its profit P . There are many different algorithms how to evaluate LNV (lottery node value), see e.g. (Rose, 1976). For example, risk aversions are sources of different modifications LNV modifications, see e.g. (Rose, 1976).. The following simple formula will be used in this paper

$$LNV = (p_1P_1 + p_2P_2 + \dots + p_nP_n) \quad (2)$$

$$p_1 + p_2 + \dots + p_n = 1$$

The following IB analysis can be easily based on different modification of formulas (1) and (2).

Fig. 1 represents a simple decision tree and it gives all numerical values needed to it using the formulas (1, 2). The decision maker has to choose one out of two lotteries. The corresponding tree evaluation follows:



Source: own work

Figure 1 Simple Decision tree

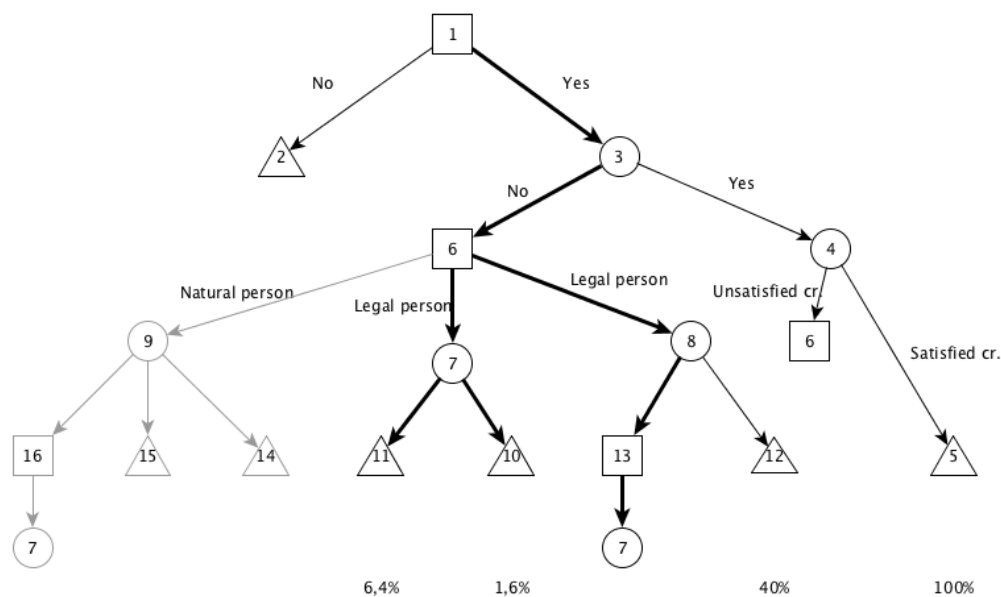
$$LNV_1 = 0.65 \times 100\,000 + 0.31 \times (-60\,000) + 0.04 \times 30\,000 = 47\,000$$

$$LNV_2 = 0.67 \times 0 + 0.33 \times 0 = 0$$

$$DNV_1 = \max [LNV_1, LNV_2] = [47\,000, 0] = 47\,000$$

The decision maker chooses the lottery No. 2, it means he/she chooses the variant – *Take Loan*

(3)



Source: own work

Figure 2 Insolvency Decision tree

Table 1 Importance of nodes

Level	Node	Importance of nodes	Level	Node	Importance of nodes
I	1	Proposal to bankruptcy	V	9	Debt clearance
VI	2	Rejection of the proposal	VI	10	The cost of the assets
II	3	Bankrupt	VI	11	Creditors
III	4	Moratorium	VI	12	Fulfilling the reorganization plan
VI	5	Meet the demands of creditors	VI	13	Failure reorganization plan
IV	6	Insolvency	VI	14	Sale of debtors assets
V	7	Liquidation	VI	15	Paying off to creditor
V	8	Reorganization	VI	16	Unsatisfied creditors

Source: Own work

2 Structure of Insolvency

2.1 Bankruptcy within Czech laws

Bankruptcy is a situation where the debtor has several (at least two) creditors and has debts more than 30 days overdue and is unable to carry out these obligations. Conditions are not met in the case if the debtor has more claims to only one creditor and if the commitments are already within exercise of power - ie. execution. In this case, according to the Insolvency Act no. 182/2006 Coll. there are several solutions to the decline of whether the legal person or natural person to deal with. Czech Insolvency Act is, like most states of the European Union set up for the benefit of the indebted entity, on the other hand stands for example - insolvency legislation used in England and Wales, which encourages the creditor.

2.2 Moratorium

An opportunity to progress after a declaration of insolvency by the court always depends on the agreement of the debtor to the creditor. One of the first options is to use the moratorium, which is advantageous for both parties. The debtor is protected for 3 months against any legal action by a creditor against his person and property. If the moratorium is successful and at the time the debtor meets all the demands of creditors (debt repayment 100%) bankruptcy will be cancelled. If the moratorium "failed" debtor falls into insolvency proceedings, where the procedure depends on the type of debtor (legal x natural person). Moratorium is also possible to declare before approving a proposal of bankruptcy by the court, but practice shows that the overall utilization of the moratorium debtor or creditor is minimal.

2.3 Insolvency proceedings

In insolvency proceedings are for debt legal person two ways of dealing with bankruptcy, from creditor point of view is often preferable reorganization.

2.4 Reorganization

In reorganization is debtor able to pay more than the debt itself in liquidation (approx. 40%) and after the reorganization plan is done, is debtor able to continue in business and not deleted from the Commercial Register. For the reorganization of the legal entity is necessary meet several conditions - a legal entity is not wounding up, are not securities traders or persons authorized to trade on the commodity exchange under a special law, whose total annual net turnover for the last accounting period preceding the insolvency petition was at least 50 mil CZK, or employ at least 50 employees in employment.

2.5 Liquidation

After the failure of the reorganization plan or non-fulfilment of the conditions necessary for reorganization, the bankrupt of a legal person changes in to bankruptcy - liquidation. Liquidation is a way of dealing with decline consisting in the fact that based on the decision to declare liquidation, creditors are determined fundamentally quite satisfied from the proceeds of the realization of assets that unsatisfied claims or portions thereof cease to exist. The insolvency court decides to declare liquidation either a separate decision or the decision together with the decision on liquidation, provided that the debtor is a person who is no possibility fulfils the conditions of reorganization or debt clearance. Effectiveness of the liquidation occurs at the moment of publication of the decision a declaration of liquidation in the insolvency register. In

bankruptcy hearing gradually meet claims for the cost of assets, ensuring creditors and unsecured creditors. With the termination of the bankruptcy occurs while deleting legal entity from the commercial register.

2.6 Debt clearance

The last possible option of dealing with bankruptcy is debt clearance, which is possible only for the natural person with the exception of non-profit legal entities. Debt clearance is the possibility of bankruptcy, which increasingly takes into account the social aspects more than the economics. It has to allow the debtor to get rid of debt and motivate them to actively participate in the amortization of its debt, at least until the expected level of 30% in case of unsecured creditors. At the same time the aim is also to reduce the cost of public budgets for the rehabilitation of those who find themselves in a social crisis.

2.7 Case study

Business company InterLinka Ltd. from Frýdlant nad Ostravicí (hereinafter referred to as the "debtor"), which deals with production engineering - metal machining, metalworking and welding in late 2009 went bankrupt with the total amount claims 101.526.682 CZK. The court approved the insolvency proceedings under the conditions and debtor is then arranged with creditors on a reorganization plan, which also was approved on the basis of fulfilling the conditions of reorganization, because the debtor's turnover was 239.762.601 CZK. After fulfilling the legal requirements of the reorganization process, a debtor's creditors proposed repayment up to 40% of the total amount due. The result of the reorganization would be repaid 40.610.672 CZK including the cost of assets and termination of InterLinka Ltd. in the form of removal from the commercial register. The debtor's reorganization plan was postponement of some creditors claims. The reason that there was no settlement to one of the creditors regarding repayment delay, it was not possible to implement the reorganization plan and the process fell into bankruptcy hearing. Where as a result is a termination of the company, and the maximum payment of creditors in the total value of the debtor's assets (tangible, intangible and fixed assets + total amount of money in bank accounts and physical checkout at the branch company), which makes 8.329.246 CZK, which is approximately 8% of the total value of the claim.

Decision tree of bankruptcy proceedings has been adapted to the needs of decision-making in the case study, where was faded opportunity to go into debt clearance, since the debtor is not eligible for this option, and so the probability ratio was so personalized. Based on the detected data there were calculated probability options along with the likely recoveries creditors' claims. To calculate the amount of recoveries receivable were used two methods of calculation – Solving by the known probabilities and the use of so – called water probability (Meluzín; Doubravský; Dohnal, 2012). Each of the above methods of calculation issued several sub – results. That will later be given to all proportion and it will be determined the best method of balancing the claims against the creditor.

Each scenario that was created by a decision tree is terminated by coagulating the percentage of the total amount of debt, depending on the selected criteria solutions. Data used to calculate the percentage degradation was obtained from Regional court in Ostrava and is the refund of the amount of the total claim.

3 Solving by the known probabilities

In the first case there have been use all known probabilities at all chance nodes, which have been obtained on the basis of statistical data and conversion to percentage probability, then applying of the basic calculations of decision tree have been determined total potential profits (Winston; Albright, 2010).

Table 2 Splitting ratio

Variant	Splitting ratio	Variant	Splitting ratio
1 – 3	0,66	6 – 7	0,072
1 – 2	0,34	6 – 8	0,011
3 – 6	0,97	6 – 9	0,917
3 – 4	0,03	8 – 12	0,05
4 – 5	0,005	8 – 13	0,95
4 – 6	0,995	9 – 17	0,041

Source: Own work

The following table shows the profits of the individual variants of the decision and the relevant known probabilities.

Table 3 Profit and the specified probabilities

Variant	Probability of variant	Probability of refund	Profit (mil. CZK)	Variant	Probability of variant	Probability of refund	Profit (mil. CZK)
1 – 3	1			6 – 8	0,134	0,4	5,44
1 – 2	0			6 – 9			
3 – 6	0,97			7 – 10	0,2		1,41
3 – 4	0,03			7 – 11	0,8		5,62
4 – 5	0,005	1	0,508	8 – 12	0,05		0,27
4 – 6	0,995	0,25	25,3	8 – 13	0,95		5,17
6 – 7	0,866	0,08	7,03	9 – 16			

Source: Own work

In tab.4 can be seen calculated profits for selected routes from a decision tree, where route 1 – 3 is the averaged result of previous subresults. The route 1 – 2 is 0 because of unfulfilled of legal conditions.

Table 4 Average of the profit

Variant	3 – 4	6 – 7	6 – 8	1 – 3	1 – 2
Average Profit (mil. CZK)	25,81	7,03	5,44	12,76	0

Source: Own work

4 Solving by the water probabilities

The algorithm using for probability determination in this option is based on a strong analogy between a water flow through a one-root tree system of pipes and the decision tree of the same topology. To make the common sense rechecks the following simplifications of the piping system are used:

- Each branch of the decision tree is considered to be a pipe of the same diameter and length.
- All pipes are horizontally situated.

Let us suppose that one liter of water is pumped into the root node of the decision tree and there is no accumulation of water in the tree. The consequence is that one liter of water must leave the tree through its terminal nodes. The longer the path the less probable the path is and the heuristic is based on the assumption that the longer a decision (sub) branch is the less (Meluzin; Doubravský; Dohnal, 2012).

Table 5 Splitting ratio

Variant	Splitting ratio	Variant	Splitting ratio
1 – 2	0,973	7 – 10	0,5
1 – 3	0,027	7 – 11	0,5
3 – 4	0,486	8 – 12	0,8
3 – 6	0,514	8 – 13	0,2
4 – 5	0,941	9 – 14	0,417
4 – 6	0,059	9 – 15	0,417
6 – 7	0,406	9 – 16	0,166
6 – 8	0,313	13 – 7	1
6 – 9	0,281	16 – 7	1

Source: Own work

The following table shows the profits of the individual variants of the decision and the relevant known probabilities.

Table 6 Profit and the specified probabilities

Variant	Probability of variant	Probability of refund	Profit (mil. CZK)	Variant	Probability of variant	Probability of refund	Profit (mil. CZK)
1 – 3	1			6 – 8	0,313	0,4	6,53
1 – 2	0			6 – 9			
3 – 6	0,514			7 – 10	0,5		0,95
3 – 4	0,486			7 – 11	0,5		0,95
4 – 5	0,941	1	46,43	8 – 12	0,8		5,23
4 – 6	0,059	0,25	0,73	8 – 13	0,2		1,31
6 – 7	0,406	0,08	1,7	9 – 16			

Source: Own work

In tab.7 can be seen calculated profits for selected routes from a decision tree, where route 1 – 3 is the averaged result of previous sub results. Then again the route 1 – 2 is 0 because of unfulfilled of legal conditions.

Table 7 Average of the profit

Variant	3 – 4	6 – 7	6 – 8	1 – 3	1 – 2
Average Profit (mil. CZK)	47,16	1,7	6,53	18,46	0

Source: Own work

Conclusion

Finally, it is clearly seen which way is best for creditors to recover most of their invested capital, which is the path of 3 – 4 the settlement in moratorium that is conditional by repayment of most creditors claims. The problem is that in a real market environment is this way unlikely and therefore most indebted company falling into insolvency. In this case, from the perspective of both the creditor and debtor the best deal is on the reorganization of the company (it is necessary to fulfil the conditions described above) and to repay debt of around 40% and for newco to continue in the company's activities, see case study (path 6 – 8). In the table below we can see the results for all options, calculated by all two methods and the final refund to creditors of their claims as a percentage

Table 8 Final comparison

Variant	3 – 4 Moratorium	6 – 7 Bankruptcy	6 – 8 Reorganization	1 – 3 Insolvency	1 – 2 Individual	
Known prob.	25,81	7,03	5,44	12,76	0	Average Profit (mil. CZK)
Water prob.	47,16	1,7	6,53	18,46	0	Average Profit (mil. CZK)
Average Profit (mil. CZK)	36,49	4,37	6	15,61	0	Average Profit (mil. CZK)
Refund %	35,94%	4,30%	5,91%	15,37%	0,00%	

Source: Own work

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Development of E-recruitment as E-business Model Based on Business Model Ontology

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Abstract

Purpose of the article Modern e-commerce businesses are developing rapidly as new modern enterprises, e-business management performance is an important topic across contemporary management and modern information technology. This paper creates e-recruitment evaluation system framework based on Business Model Ontology. More objective evaluation recommendations on e-recruitment evaluation that provide useful implication of e-business models for e-recruitment development are presented. E-recruitment evaluation development could be expanded through knowledge creation process in the context of Business Model Ontology.

Methodology/methods Exploratory research, synthesis and categorizing.

Scientific aim Create new e-recruitment evaluation categories through knowledge creation process in the context of Business Model Ontology.

Findings More objective evaluation recommendations on e-recruitment evaluation that provide useful implication of e-business models for e-recruitment development. Authors see e-recruitment business model advantages in e-recruitment methods, transferring knowledge for job seeker through automated processes creating the ability to accomplish these processes in a shorter time. These advantages are the main technical feature of the e-recruitment business. Particularly it is interaction with job seeker in e-environment, thus reducing cost associated with e-recruitment evaluation.

Conclusions E-recruitment business model should be based on indicators providing effective information content required to affect job seekers' positive decision. Advantages offering high quality information interaction for e-recruitment business should be developed. To contribute to this process, authors present indicators to evaluate important issues associated with information interaction in order to develop effective e-recruitment business model. E-recruitment focus only on outcomes such as job acceptance decisions or application attractiveness should be carefully evaluated. Thus e-recruitment's effect on initial job-seeker interest is limited, decreasing the potential possibility to attract a job-seeker and receive positive feedback. Information interaction playing a certain role for a job seeker's attitude and job acceptance decisions, but the motivation enhancing possibilities are likely to be less effective than traditional ones.

Keywords: e-recruitment, e-business, Business Model Ontology, value creation, information and communication technology, ICT

JEL Classification: G14, L21, M1, M10, M21

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Introduction

Under conditions of globalisation the boundaries of labour market continue to expand generating new opportunities and challenges. Workforce became more geographically mobile searching for well-paid job and better life circumstances. The increasing migration of workforce creates a surplus of available labour in developed countries, and the shortages of labour in less prosperous countries. Also, organisations look for developmental possibilities expanding their market. These organisations' activities include the expansion or relocation of business abroad, the utilisation of cost efficient forms of labour (e.g. flexible types of employment) etc. In majority of cases, organisations encounter the matter of personnel recruitment. As Deloitte's survey "Global Human Capital Trends 2015" demonstrates, the organisations' need for talent and contingent workers will continue to grow (Deloitte, 2015), thereby recruitment process must be extensive and high-calibrated simultaneously. The Boston Consulting Group's survey "Creating people advantage 2014-2015" reveals that the future importance, urgency and invested effort of recruiting processes and strategy are higher in high performance organisations than in low performance organisations (Boston Consulting Group, WFPMA, 2014).

The rapid electronic environment development over the last decade has fostered the e-recruitment growth and has provided companies with opportunities that they previously did not have. By employing advantages offered by the e-recruitment, entrepreneurs can ensure expedient and effective communication with the target audience, by promoting their services on the global market. The performed scientific studies show that proper and skilful use of modern technologies can contribute to significant development of companies. Up to now, no unequivocal studies have been performed about the use of the electronic environment in ensuring development of micro, small, and medium enterprises. Ph. Kotler, D. Tapscott, P. Drucker, and J. A. Pearce (Sceulovs, 2013) maintain that two parallel markets exist and are developing – the traditional and the electronic environment. The electronic environment is used for various needs – for trade, marketing, advertisement, studies, communication, training, etc. Simultaneously, there is an opinion claiming that in future, the majority of businesses will be performed on the electronic market, hence advancing the dominant position of the e-environment in achieving entrepreneurship competitiveness. In recent years, companies' intellectual capital (IC) has gained increased attention due to globalisation and integration of capital markets, greater mobility of monetary and actual goods, tougher competition, new dominating industries, and developments in information and communication technology (ICT).

Scientists (e.g. Beattie and Pratt, 2001; Eustace, 2000; Lev, 2000; Upton, 2001) have argued that demand for information (external communication) on knowledge-based resources is growing as companies increasingly base their competitive strength in the value of know-how, patents, skilled employees and other intangibles. The electronic environment already now offers companies practically all the necessary marketing and communication tools for ensuring company development by creating competitive advantages, nevertheless, not all companies can employ the opportunities rendered by the e-environment, in order to increase company competitiveness and productivity. These trends promotes e-recruitment as a new form of business that has changed conventional recruiting to a more efficient "continuous mode" (Lee, 2005) and has reduced hiring costs compared to traditional recruiting through newspapers and magazines (Gill, 2001). Competitive advantages provided by e-recruitment methods and value creation process principles should be better explained in order to create effective business model. Recent findings stated that more than 20% of job seekers have rejected job opportunities simply based on poorly designed websites (Pastore, 2000) and that company-designed websites are so complicated that about three-quarters of all job seekers are unable to use them successfully (Brown, 2004). Conventional management studies of employee e-recruitment methods have failed to provide managers with a theory-based understanding of how e-recruitment contribute to recruiting success (Allen, Van Scotter and Otondo, 2004; Breaugh and Starke, 2000) or explain "not only what happens, but why it happens" (Barber, 1998).

Considering challenges coming from using e-recruitment methods, this article develops an e-recruitment evaluation system framework based on Business Model Ontology (BMO). New model is created to identify crucial e-recruitment factors. This model is based on statement that conventional evaluation system is not suitable for the recruiting process and should be developed. From this perspective, the model presents e-recruitment as an e-business and evaluates in BMO context. The model is aimed to create sustainable e-business by identifying value creation process and significant factors.

1 E - recruiting as a business

In general, e-recruitment (or online recruitment, internet recruitment, web-based recruitment) is the process of human resource (HR) recruitment exploiting electronic resources. The majority of the definitions of e-recruitment are derived from view of human resource management theory and practice, so focused to e-recruitment as instrument or process by which organisation's needs for workforce is ensured. For example, Armstrong defines e-recruitment as the use of the internet to advertise or 'post' vacancies, provide information about jobs and the organization and enable e-mail communication to take place between employers and candidates; the latter can apply for jobs online and can e-mail application forms and their CVs to employers or agencies (Armstrong, 2009). Some HR specialists interpret e-recruitment not only as the using internet for hiring, but also emphasize the application of HR software (HRZone, 2015). The academic works examining e-recruitment are increasing, but many studies analyse this subject from human resource management, psychological or information and communication technology perspectives. Searching relevant articles in database Scopus,

applying keywords “e-recruitment”, or “e-recruiting”, “online recruitment”, “internet recruitment”, and “business” and “model” for document’s title, abstract or keywords, only fifteen results were obtained. Approximately half of this search results could be referred to the theme of e-business.

The typical forms of e-recruitment are corporate websites, commercial job boards and recruitment agencies’ sites (Armstrong, 2009). The last two represent e-business. According to usual sequences of staffing process, commercial job board is relatively narrow form of e-business, where main source of revenue is advertisement of vacancies. In contrast, recruitment agencies offer much more services and its completions – from investigation of pool of potential candidates to support for hired employee. The vacancies market handled by job boards and recruitment agencies is divided by location, economy sector, job types and level (Barber, 2006).

There are different types of recruitment agencies that provide external recruiting services for organisations including retained search, contingency search, full-scale recruitment process outsourcing (RPO), on-demand RPO, and staff augmentation/placing consultants (Greenberg, 2013). Retained search agencies, or executive search firms, provide search services for senior, executive, or other highly compensated positions. Retained search agencies work exclusively with clients, require an upfront retainer, and typically charge 30 to 35 percent of the salary of the position. Payments are made according to milestones in the recruitment process, so at least some fees will be paid regardless of whether a hire is actually made. Contingency search agencies search for candidates for their clients and get paid when a candidate they present is hired. Their search fees are typically 20 percent of the candidate salary when hired. Full-scale RPO agencies acts as a company’s internal recruitment function for a portion or all of its jobs. RPO is utilized when a company experiences high volume staffing needs that internal HR can’t cost-effectively handle along with their core responsibilities, or when there is no HR function in the company. On-demand RPO agencies provides recruiting, sourcing, and coordination on an as-requested basis rather than with long-term contracts. The agencies can also provide companies with own consultants for project or high-demand business objective.

To provide effective and efficient services, all types of recruitment agencies have to use e-recruitment advantages, which are associated with wider access, faster processes, reduced costs, corporate image promotion and reinforcement (Barber, 2006). As Kelly Outsourcing and Consulting Group’s survey “Global Trends in RPO and Talent Recruitment 2014” demonstrates, organisations are very interested in recruitment service outsourcing (Berklich, 2014), so there are favourable conditions to develop commercial side of e-recruitment.

2 E - recruiting as value creation process

The most important aspect of value creation process is e-recruitment revenue streams that the source for business model. (e.g., advantages over other products, website design, attitude-relevant information, user friendly interface and etc.). In practice, these main advantages in e-recruitment environment are promoting intensive knowledge (information) interactions between employers and applicants (i.e., its interactive characteristics), and the degree to which it provides necessary information. The goal of e-recruitment business is to influence job seeker attitudes toward job application and that the ability to accomplish this goal is affected by ability to manage key indicators. Management decisions should promote these key indicators that affecting job seeker decisions.

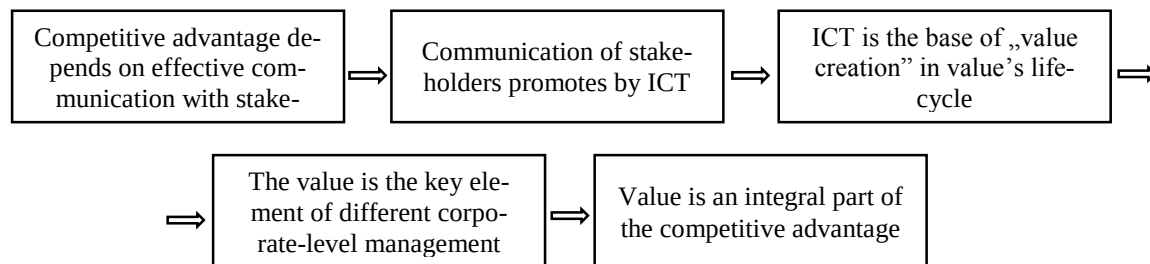
Various theories were developed many years ago, when the electronic market was not yet developed, and hence are suitable for the conventional market. Due to this reason, the authors of the article suggest that companies use the Alexander Osterwalder’s value proposition concept or the approach that is a constituent element of the author’s developed business model canvas. (Osterwalder, 2003, see Figure 2). The Osterwalder’s business model was formed based on Freeman’s stakeholder theory (Freeman, 1984). The model is adapted to today’s market needs and conditions, and the importance of the electronic environment, i.e. of the electronic market, in entrepreneurship is taken into account. Osterwalder distinguishes between “value proposition” and “elementary value proposition”, which is an element of value proposition. The authors wish to draw attention to Osterwalder’s “value life cycle” consisting of five stages: value creation, appropriation, consumption, renewal, and transfer (Osterwalder, 2003).

All life cycle stages are linked to value consumption, using the electronic environment: value creation process (based on ICT) – adaptation of various products for the needs of an individual consumer. Value appropriation – “a one click purchase” at an internet shop. Value consumption – listening to music, watching a movie and etc. Value renewal – various software updates, value transfer – disposal of old computers and other machinery, giving away unnecessary books and equipment for further use, etc.

Upon combining analysed models, it can be seen that the information and communication technologies (in the Osterwalder’s model) or the information communication technology bear great importance in creating value for consumers and that they undoubtedly affect the company’s image. The value concept is broadly used in various business models, including e-business models. The value forms the basis of several business models. The e-business model is based on mutual integration of key flows and values and implementation thereof between e-market participants, through the use of the e-environment. Three main e-business model elements can be distinguished: flows, participants, value. The term e-business model describes a broad spectrum of informal and formal models, which may be used in companies to depict various

business aspects, such as operational processes, organisational structures, and financial forecasts (Laudon and Traver, 2010).

The conceptual business models enable companies to analyse the current condition more broadly and to evaluate the already existing business. By employing this analysis, companies can develop new business development directions or improve the existing ones, because a modern market demands that companies change and are aware of their global condition. Entering the global market allows companies to reduce their dependency on local market fluctuations. The use of ICT promotes communication (Figure 1); moreover, ICT is at the basis of the first stage “value creation” of the value life cycle.



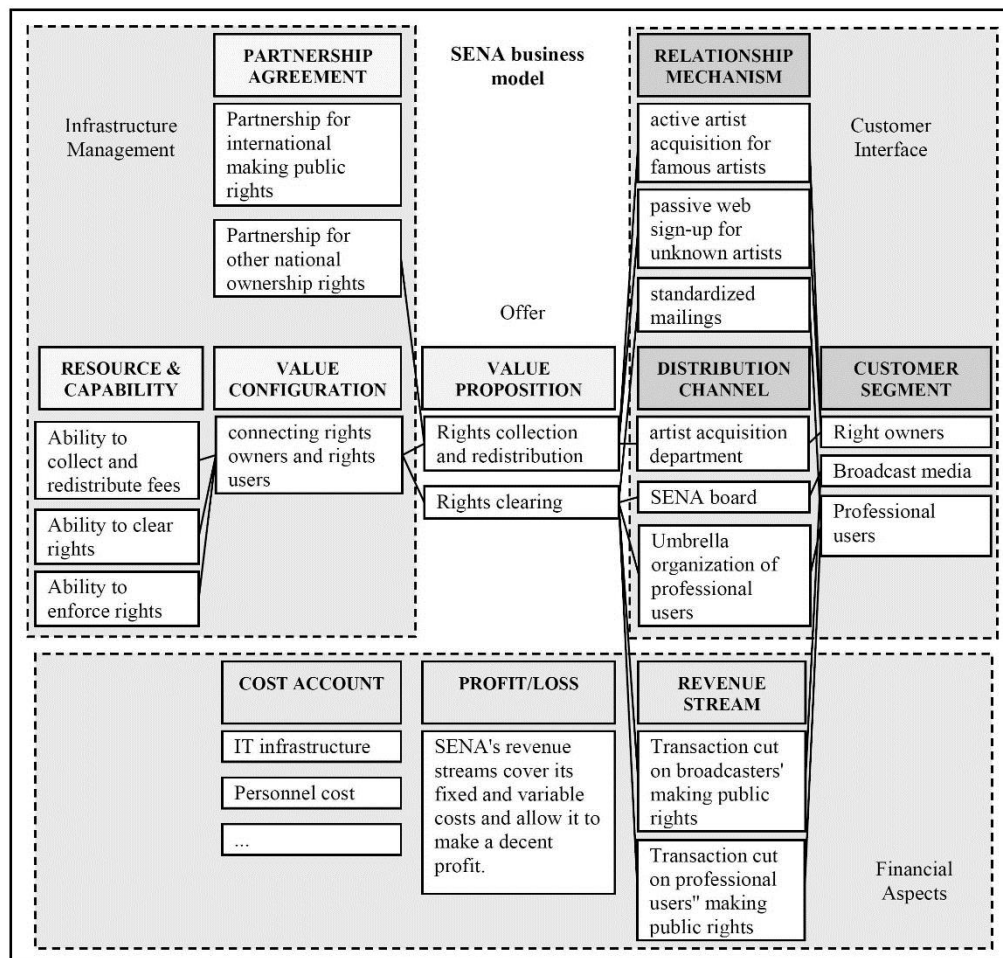
Source: Shatreovich and Sceulovs, 2014

Figure 1 Competitive advantage, ICT and value intermediation

Based on the authors’ performed study about the use of e-environment in e-business companies (Sceulovs and Gaile-Sarkane, 2010), having studied value formation theories, having analysed the types and theories of business models, the authors have drawn a conclusion that the most suitable course of action would be to base further development on the Osterwalder’s Business Model Canvas (Business Model Foundry, 2014). Forbes has referred to this business model canvas as a simple instrument for creating innovative business models (Sceulovs, 2013). The model is based on active use of the e-environment in entrepreneurship. There are nine stakeholder groups at the basis of the model. Meanwhile, reciprocal and effective interaction and communication between the stakeholders promotes a company’s competitiveness (Osterwalder, 2009).

At the same time, value is an intrinsic part of a competitive advantage. It can be concluded that a competitive advantage depends on effective communication with stakeholders and customers. The previous study done by the authors about competitiveness of companies’ shows that it is the use of communications networks, being a constituent element of competitiveness of companies, that the companies are using the least (Sceulovs, 2013). Thus, the authors of the paper assume that by increasing e-environment element as part of IC system, the competitiveness companies will also increase.

For the practical use of the quantitative evaluation model in e-business authors of the paper develop BMO (Osterwalder, 2003). The BMO’s roots are found in management science and information systems research. Its four basic areas of preoccupation of a business model, the value proposition, the customer interface, the infrastructure management and the financial aspects stem from management literature (Hagel III and Singer, 2000; Kaplan and Norton, 1992; Markides, 1999). The proposed business model elements providing practical contribution for business users. Its scientific roots originate in so-called design science (Owen, 1997) and its recent upsurge in Information Systems research (Au, 2001; Ball, 2001; Hevner *et al.*, 2004; March and Smith, 1995).



Source: Gordijn, Osterwalder and Pigneur, 2005

Figure 2 SENA business model

Authors of the paper see business model as a conceptual tool that contains a set of elements and their relationships that allows expressing the business logic of a company. It is a description of the what, the who, the how and the how much in a company (Hagel III and Singer 2000; Kaplan and Norton 1992; Markides 1999). In other words it describes the value a company offers (what?) to one or several segments of customers (who?) and the architecture of the firm and its network of partners for creating, marketing and delivering this value and relationship capital (how?), in order to generate profitable and sustainable revenue streams (how much?). This business model has a good visualization, allowing understanding value creation logic.

In human resource management sources, many indicators for recruitment evaluation can be found which allow to measure some quantitative and qualitative aspects of this process (Table 1).

Table 1 Examples of traditional indicators for recruitment

Quantitative indicators	Qualitative indicators
Number of applicants attracted per method	Ratio of qualified to unqualified applicants attracted
Number of candidates interviewed	Job performance of employee attracted by method
Costs per applicant attracted	Tenure of employee attracted by method
Total recruiting cost per employee hired	Proportion of those interviewed who receive invitations to visit
Time from start to hiring of applicant	Organisation's or Applicants' satisfaction with recruitment process

Source: based on Phillips, 1996

Obviously, the traditional indicators for recruitment are not sufficient to evaluate e-recruitment as business. Using discussed above approach authors propose an additional set of indicators to evaluate e-recruitment (Table 2).

Table 2 Non-financial indicators for e-recruitment company's development determination

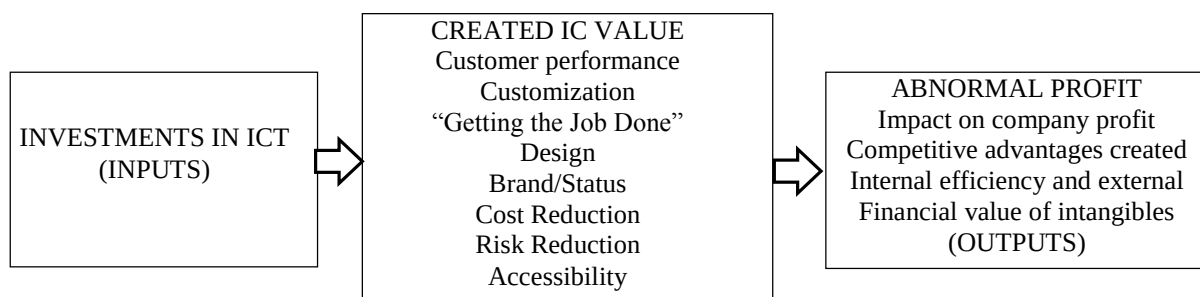
Indicator name	Explanation
Market share by purchased units	Market share by purchased units (%) = (Purchased units (%)) / (Total units of Purchased units (%))
Market share by revenue	Market share by revenue (%) = (Revenue from sales) / (Total revenue from market sales) x 100%
Relative market share	Relative market share (%) = (Brand market share) / (Biggest competitors market share) x 100%
Market concentration	Shows which a relatively small number of companies account for a large market share.
Brand development index	Brand development index = ((Brand sales for a group)/(Household in a group)) / ((Total brand sales)/(Total household))
Penetration (market or brand)	Market penetration (%) = (Customers who bought product) / (Total population) x 100%
Penetration share	Penetration share (%) = (Brand penetration) / (Market penetration) x 100%
The total number of active consumers	Percentage of consumers who at least once certain periods of time have bought a brand or product.
Awareness	Awareness scale with point grading system.
Desire to search	Percentage of the number of consumers who want to postpone purchase, changes stores or reduce purchases volume, focuses on other brands
Trial rate	Trial rate (%) = (Applied first time in period t) / (Total population (number of customers)) x 100%
Penetration t	Penetration = (Penetration t x Replicates rate (%)) x first purchased in period t
Sales forecast	Sales forecast = Penetration x The average purchase frequency x Average number of sold units
Repeated purchases	Number of repeated number of buyers = Trial number x Repetitions rate (%)
Trial volume	Trial volume = Trial number x Number of appliances
Repeated purchases volume	Repeated appliances volume = Repeated buyers number x Number of appliances made by one customer x Repeat times
Numerical distribution	Numerical distribution (%) = (Number of brand banners) / (Total number of banners) x 100%
All products distribution	All products distribution (%) = (Total sales volume of all brand's sales places) / (Total sales volume of sales places (banners)) x 100%
Distribution of particular type of product (PTP)	Distribution of PTP (%) = (Total PTP brand's sales places sales volume) / (Total sales volume of sales places (banners)) x 100%
Premium price	Premium price (%) = (Revenue market share) / (Product market share) x 100%
Impressions, Opportunities-to-See, Exposures	Impressions = Network Reach x Frequency Network Reach – the percentage of reach of the certain audience through the media; Frequency – certain ad or others activity views number, which done by one user.
Clickthrough Rate	Clickthrough rate = Clicks / Effect
Visits indicators	Visits, Sessions – a particular company's website first-time attendance of users. Visitors, Unique Visitors – the number of users who visit a particular website of the company for a given period. Clickstream – the way, how user find website. Abandonment Rate – the percentage of abandoned number of websites. Cookie – the small visitor's file, which recorded by website and helps identify user next on visiting time.
Website traffic statistics dynamics	How many internet users visited a given site during a given period.
Web site visit duration	Average time which users spent on the site.
Site visitors characterization	Behaviour: new and repeated visitors, frequency etc. Demographic data: language, location, gender, etc.
Technologies	Technologies used in site attendance: device, from which the attendance made; browser and operating system, with which help made attendance; provider used for site visiting; visitors flow (what content were visited on the site); in what way was visited site - directly or via link and/or divert from other sites.

Source: based on Sceulovs, 2013

Business Model focuses on the design of a company's value creation model, visualization of value creation in BMO is highly relevant, and such visualisations are used to explain a model to stakeholders. Additionally, it proposes specific diagrams, for instance for distribution channel strategies or activity configurations.

3 Knowledge as successful e-recruitment element

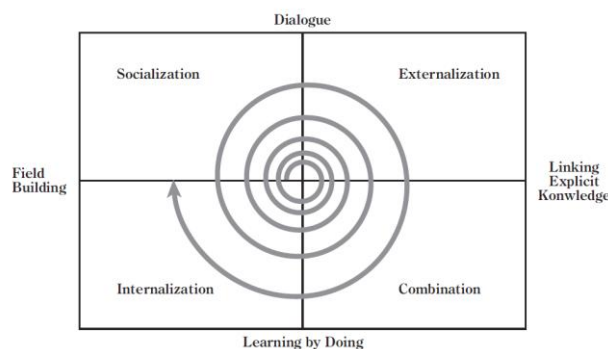
In the context of knowledge, since knowledge itself is invisible, its creation and use are hardly measureable. Nonetheless investing in ICT many valuable outputs are generated (brand, know-how, patents etc.). Value generated by knowledge will probably have time lag (long-term) and not always have instant impact on profit (short-term). Using this model authors can describe the methodology of evaluation model (Figure 3). Promoting investments to ICT and specifically to e-environment, it is possible to evaluate company value. Comparing the investment made by company to ICT and abnormal revenue flow generated by ICT will reveal the intangible value created. Reliance on productive tangible assets such as raw materials and fixed capital no longer account for investments made and wealth created by new and prospering companies. As the primary input to organizations' value creation processes is internal resources, classic economic laws are hardly applicable for knowledge and other intangible resources. These resources traditionally seen as external could make an important contribution to the value creation process of the company.



Source: based on Pullic, 2000

Figure 3 Model of ICT, e-recruitment and value creation process

There are two types of knowledge: explicit knowledge and tacit knowledge. Explicit knowledge can be expressed in formal and systematic language and shared in the form of data, scientific formulae, specifications, manuals etc. It can be processed, transmitted and stored relatively easily. In contrast, tacit knowledge is highly personal and hard to formalize (Figure 4).



Source: Nonaka, 1995

Figure 4 Knowledge spiral

Nonaka's conceptualization of the relationship between tacit and explicit knowledge has also been criticized. While Nonaka treats tacit and explicit knowledge as separable, other theorists regard tacit knowledge as always necessary for explicit knowledge to be understood (Adler, 1995; Stacey, 2001; Tsoukas, 2003).

Knowledge is transferred beyond organisational boundaries, and knowledge from different organisations interacts to create new knowledge. (Badaracco, 1991; Inkpen, 1996) Through dynamic interaction, knowledge created by the organisation can trigger the mobilisation of knowledge held by outside environment such as consumers, affiliated companies, suppliers or distributors. A product/service works as the trigger to elicit tacit knowledge when customers give meaning to the product by purchasing, adapting, using, or not purchasing it.

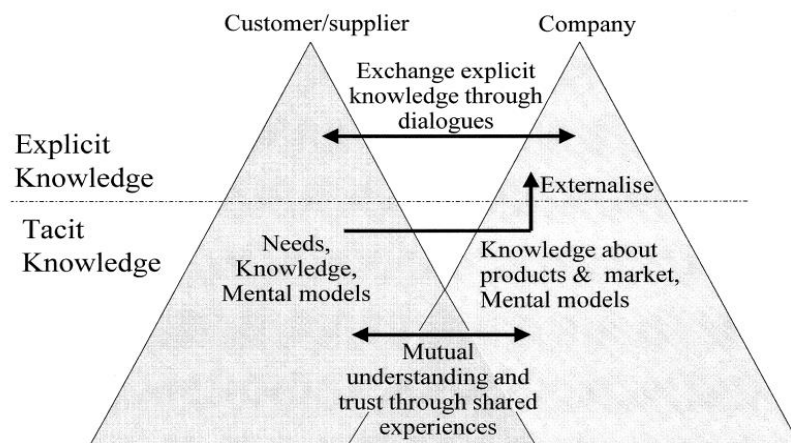


Figure 5 Creating knowledge with outside environment

Figure 5 shows how the organisation interacts with outside constituents to create knowledge. It is evident that ICT tools, methodologies and practices play a critical role in understanding the applicability of the SECI model. (Cayaba, 2012; Kodama, 2008; Sian and Kelkar, 2013)

Authors see e-recruitment as a modern and powerful tool in creation of IC that helps to transfer company knowledge to customers and build product/service value. The IC literature draws on aspects of the practical applications, providing a framework for explaining the value creation process as the link, between resources and shareholder value.

The paper goal is dedicated to evaluating e-recruitment company development, as the e-recruitment dominance in the market increases, as well as to interaction of both fields. The paper question is “how to evaluate e-recruitment using ICT”? Its deals with the sector of ICT as a result of e-recruitment development. This paper analyses and describes the role of the ICT sector in modern entrepreneurship and e-recruitment processes as a part of knowledge management and IC processes. The e-recruitment is analysed in this context as a factor affecting entrepreneurship development and competitiveness.

The theoretical and methodological ground-work of the study using literature exploratory approach, in the research generally accepted qualitative and quantitative data analysis methods of the economic science were employed, among them, statistical data processing, data grouping, and inductive-deductive data analysis methods. The scientific study employs surveying, observation study method, as well as comparative, and analytical methods, which are used by the authors to compare and analyse facts and assess solutions to specific issues. Based on the IC approach, the paper start's the research that explores the effect of intangible resource in creation of shareholder value.

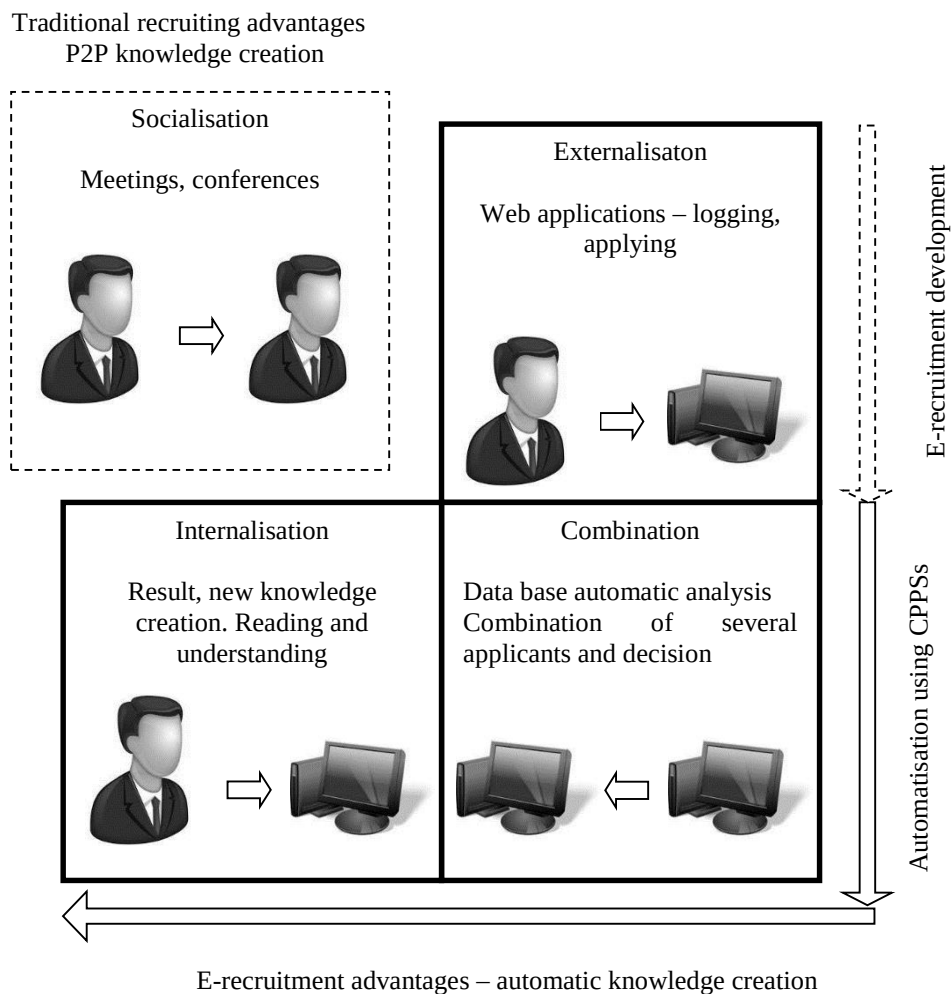
4 The concept of e-recruitment business model

Authors see e-recruitment business model advantages in e-recruitment methods, transferring knowledge for job seeker through automated processes creating the ability to accomplish these processes in a shorter time. These advantages are the main technical feature of the e-recruitment business. Particularly it is interaction with job seeker in e-environment, thus reducing cost associated with first phase (Socialisation, Figure 6).

The impact of information was noted long ago by Behling, Labovitz, and Gainer (1968), who observed that job choice decisions are based on thoughtful assessment of key information concerning objectively measurable job attributes such as pay and working conditions.

Information interaction is suggested by authors to be central point as soon as job seeker's interaction process is very important. The importance of knowledge is found in information processing studies, which have demonstrated that prior knowledge of product characteristics greatly affects the way in which consumers investigate, process, and organize product-related information (Alba and Hutchinson, 1987).

This phase (Externalisation, Figure 6) is analysed in management studies showing interaction experience create substantially different variations in the ways that job seekers gather and use labour market information (Rynes, Orlitzky and Bretz, 1997). Experienced customers are better able to extract and analyse important central information (Meglino, DeNisi and Ravlin, 1993).



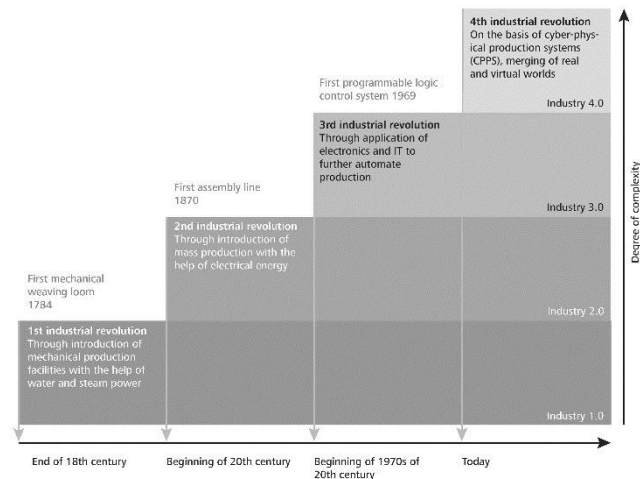
Source: based on Nonaka, 1995

Figure 6 E-recruitment business model

The implication of these findings for e-recruitment is that e-recruitment business model potentially could neglect these shortcomings by using only last two phases (Combination and Internalisation). The advance of modern ICT has launched the Industry 4.0, to take up a leader role in industrial IT which is currently revolutionizing the manufacturing engineering sector (Germany Trade and Invest, 2014).

Technology breakthrough is allowing to increase the level of automation for interaction with job-seekers and labour cost decreased. These trends will be more focused on intangible assets (associated with IC) managing company data flow, plant-specific software and the “hardware” of manufacturing technology.

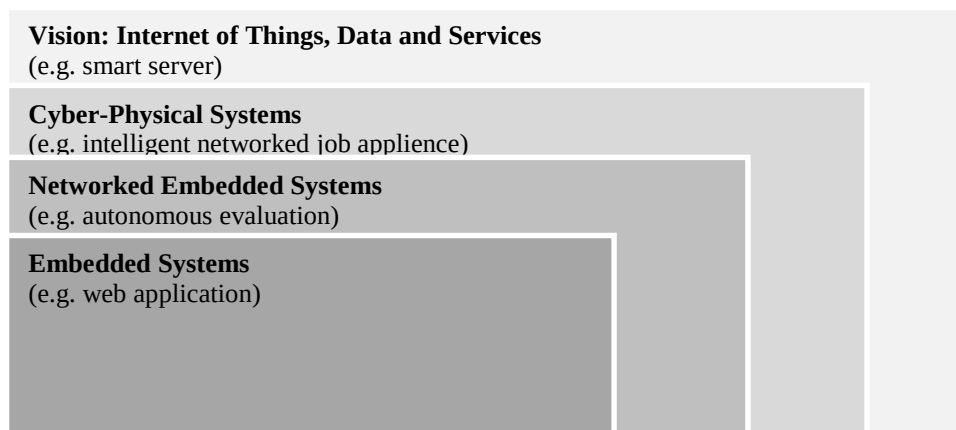
Since ICT is only one part of the Industry 4.0, the other is its use in the industrial sector and the utilization of the benefits that it brings to the value chain (Figure 7).



Source: Schlick, Stephan and Zühlke, 2012

Figure 7 The evolution of embedded systems into the internet of things, data and services

“Industry 4.0” (sometime referred as Smart industry) advantages are coming from the technological evolution - from embedded systems to cyber-physical systems. Industry 4.0 connects embedded system production technologies and smart production processes associated with the new technological age advantages (Figure 7). Decentralized intelligence helps create intelligent object networking and independent process management, with the interaction of the real and virtual worlds representing a significant new aspect of the manufacturing and production process. Industry 4.0 creates the vision (Figure 7) of an entirely networked production, in which orders managed automatically throughout entire value chains, order processing machines and material and organize their delivery to the customer. (Berger, 2014) Using these data efficiently provides a considerable competitive advantage (reducing downtimes, accurate planning, reducing unit costs and etc.).



Source: Federal Ministry of Education and Research, 2012

Figure 8 The evolution of embedded systems into the internet of things, data and services

New Industrial revolution (Industry 4.0) is also called Internet of Things, Data and Services (Figure 8). Cyber-physical systems provide the basis for the creation of an Internet of Things, which combines with the Internet of Services to make Industry 4.0 possible.

The widespread adoption by e-recruitment automatic operations of ICT is increasingly blurring the boundaries between the real world and the virtual world in what are known as cyber-physical production systems (CPPSs) (Federal Ministry of Education and Research, 2013).

In contrary to e-recruitment, studies of interviewers as recruiting sources have found that such factors as interviewer personableness, competence, empathy, interest in the applicant, communication skills, and enthusiasm often play significant roles in applicant interest in a job and intention to accept a job offer (Harris and Fink, 1987; Maurer and Howe,

1995; Powell, 1991). E-recruitment lacks these advantages and these findings show that motivation of job seeker will be affected (Petty, Cacioppo and Schumann, 1983) and decreasing their motivation (MacKenzie and Spreng, 1992). These findings emphasize that search motivation is a key element of a job-seeker, and that e-recruitment must carefully consider negative effects.

Conclusion

The cornerstone advantage of e-recruitment methods lies in labour cost. E-recruitment methods represent a growing and high-potential opportunity for business to reduce recruiting costs (Cappelli, 2001). Hence the goal of e-recruitment is to satisfy job-seekers needs by providing competitive virtual environment to traditional one. The ability to manage value creation process as interaction effect's efficiency is of the main goals, meeting job-seeker needs and web applications capabilities.

Controversially the problems discussed here about Socialisation affect toward motivation and the effort needed to attract a job offer should be taken in consideration. E-recruitment focus only on outcomes such as job acceptance decisions or application attractiveness should be carefully evaluated. Thus e-recruitment's effect on initial job-seeker interest is limited, decreasing the potential possibility to attract a job-seeker and receive positive feedback. Information interaction playing a certain role for a job seeker's attitude and job acceptance decisions, but the motivation enhancing possibilities are likely to be less effective than traditional ones.

Nonetheless such our findings provides e-recruitment with a new approach in value creation. Firstly, an effective information interaction development process, that requires careful and specific attention to certain indicators. Secondly, the effective management of information provided by job-seeker.

Based on this approach, e-recruitment should create a virtual recruiting environment that effectively interacts with job-seeker partially motivating his decision process.

E-recruitment business model should be based on indicators providing effective (user friendly) information content required to affect job seekers' positive decision. Advantages offering high quality information interaction for e-recruitment business should be developed.

To contribute to this process, authors present indicators to evaluate important issues associated with information interaction in order to develop effective e-recruitment business model.

However, the field of research is very wide and this paper presents just an in-sight into the large scope of questions that should be analyzed in the future researches.

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Risk Metrics of Equity Indexes and Investors Worries

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Abstract

Purpose of the article: The cornerstone of the modern theory of decision making under risk is expected utility maximization. The expected utility maximization is an inherent part of the classical portfolio optimization approach where the standard deviation metrics represents a value of risk in this method. Therefore in this article is suggested method for analyzing risk of equity indexes mostly with the focus on private investor's worries behavior.

Methodology/methods: The primary and secondary research was applied. Next the primary research was done with selected equity indexes. As the representants of equity indexes were chosen not only "typical" representative as MSCI World index but mainly some derivatives of indexes which track a dividend strategy (indexes comprising stocks of companies that pay dividends) or value investing strategy.

Scientific aim: The aim of the article is a critically describe the problems related with private investor's risk attitude and which risk metrics is suitable to use for private investor who invest into the equities mainly or equity oriented portfolio.

Findings: Investors have to invest in stocks or indexes with down-side risk close to zero, respectively those indexes whose down-side risk is lowest among all. This down-side risk should be measured with using below-target semi-variance. In practice, however, positive outliers should be regarded as a bonus and not as a risk. It is therefore better to look at some measure of downside risk.

Conclusions (limits, implications etc): The down-side risk metrics is better indicator than standard deviation in the investment process, or decision making about structure of investment portfolio. Among analyzed equity indexes are the best measured with Sharpe or Sortino ratio those with small down-side risk.

Keywords: expected utility theory, risk, return, equity, semideviation, Sortino ratio, bootstrap

JEL Classification: D00, G00

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Introduction

People have been making investment or financial decisions for thousands years. These decisions involve risk as some investments pay off and some do not. A risk is an extremely complex phenomenon that is studied by many disciplines such as economics, psychology, finance, and management. Any definition of risk is likely to carry an element of subjectivity, depending upon the nature of the risk and to what it is applied. As such, there is no all encompassing definition of risk. The Royal Society (1983), for example, view risk as the probability "...that a particular adverse event occurs during a stated period of time, or results from a particular challenge". (The Royal Society. 1983). Risk Assessment: Report of a Royal Society Study Group. London: Royal Society.)

There are many approaches to measure risk aversion of private investors and by investor's risk profile to create a suitable portfolio. One of the classical approach is to use mean-variance optimization for his proposal. This approach use mean-variance analysis as the investment criterion under which investors minimize the variance of the total portfolio return by setting the portfolio expected return to a prescribed target as in the classic static case. Later private investors claim's that because "an investor worries about underperformance rather than overperformance, semideviation is a more appropriate measure of investor's risk than variance" (Markowitz, Todd, Xu, and Yamane, 1993).

Literature review

The cornerstone of the modern theory of decision making under risk is expected utility maximization as elaborated by Bernoulli (1738), Ramsey (1931), von Neumann and Morgenstern (1944) and many subsequent authors. The theory of individual investment decisions often assumes that financial risk is measured by the variability of yields, so that well-informed individuals can trade off this risk with the return in deciding whether to purchase the investment product. Such a risk-return trade-off is usually modelled using the well-known subjective expected utility theory framework, where the individual's reluctance to hold risky assets is driven by their degree of risk aversion (Eeckhoudt & Gollier, 1995). Capon et al (1996) found that return and risk comprise only part of the decision process for individuals and that attributes other than return and risk are actively considered and weighed by investors in unit trusts: these individuals responded to perceived risk, rather than objective risk. Worzala et al (2000), and Diacon and Ennew (2001) also suggest that the principles of perceived risk may be helpful in understanding investor behaviour.

Other researchers have noted that an individual's distaste for losses is more broadly based than mere dislike of volatility; instead risk-taking behaviour is characterised by an aversion to losses (Kahneman and Tversky, 1979; Tversky and Kahneman, 1992). Kahneman and Tversky (1979) propose theory called Prospect Theory (PT) as a descriptive model of decision making under uncertainty. The prospect theory is not a normative theory, but a descriptive approach to explain real world behaviour. Kahneman and Tversky realised a series of experiments to identify the manner in which people make choice in the face of risk. The theory describes such decision processes as consisting of two stages, editing and evaluation. In the first, possible outcomes of the decision are ordered following some heuristic. In particular, people decide which outcomes they see as basically identical and they set a reference point and consider lower outcomes as losses and larger as gains. In the following evaluation phase, people behave as if they would compute a value (utility), based on the potential outcomes and their respective probabilities, and then choose the alternative having a higher utility. The formula that Kahneman and Tversky assume for the evaluation phase is (in its simplest form) given by

$$U = \sum_{i=1}^n w(p_i)v(x_i) = w(p_1)v(x_1) + w(p_2)v(x_2) + \dots + w(p_n)v(x_n)$$

Where x_1, x_2 are the potential outcomes and p_1, p_2 their respective probabilities. v is a so-called value function that assigns a value to an outcome. The value function (see the Figure 1) which passes through the reference point is s-shaped and, as its asymmetry implies, given the same variation in absolute value, there is a bigger impact of losses than of gains (loss aversion). In contrast to Expected Utility Theory, it measures losses and gains, but not absolute wealth. The function w is called a probability weighting function and expresses that people tend to overreact to small probability events, but underreact to medium and large probabilities.

The value function shows the sharp asymmetry between the values that people put on gains and losses. This asymmetry is called loss aversion. Empirical tests indicates that losses are weighted 2-2,5 times as heavily as gains (Kahneman and Tversky, 1991).

Kahneman and Tversky value function is in accordance with the "safety first" criterion which was introduced by Roy (1952). In the same year when H. Markowitz (1952) who identified risk as related to the varying financial outcomes and adopted the standard deviation of the residual assets as the tool for measurement of risk. The "safety first" criterion measures the probability of outcomes falling below a target return, this criterion meant introduction of a downside risk measurement principle. A few years later, Markowitz (1959) gave a generalized discussion on risk, and introduced alternative measurements tools as semi-variance, expected value of loss, expected absolute deviation, probability of loss and the maximum loss. Markowitz introduced also his idea of downside-risk and suggested two types for measurement of a downside risk:

- a semivariance computed from the mean return or below-mean semivariance (SV_m)
- a semivariance computed from a target return or below-target semivariance (SV_t).

Both measures compute a variance using only the returns below the mean return (SV_m) or below a target return (SV_t). Markowitz called these measures partial or semi-variances, because only a subset of the return distribution is used (Nawrocki, 1999).

$$SV_m = \frac{1}{K} \sum_{T=1}^K \max[0, (E - R_T)]^2,$$

$$SV_t = \frac{1}{K} \sum_{T=1}^K \max[0, (t - R_T)]^2,$$

where R_T is an asset return during time period T , K is the number of observations, t is the target rate of return and E is an expected mean return of the asset's return. A maximizing function denoted as max, indicates that the formula will square the larger of two values i.e. 0 and $(E - R_T)$ or $(t - R_T)$. Markowitz (1991) also further developed this approach, in order to define a measure of downside risk.

Sortino and Van der Meer (1991) note that standard deviation has one major drawback. Standard deviations measure uncertainty or variability of returns but in some cases this does not match one's intuition about risk. Large positive outcomes are treated as equally risky as large negative ones. In practice, however, positive outliers should be regarded as a bonus and not as a risk. It is therefore better to look at some measure of downside risk.

According findings by Kahneman and Tversky's (1979) loss aversion preferences imply that investors who dislike downside losses will demand greater compensation, in the form of higher expected returns, for holding shares with high downside risk.

Kahneman and Tversky suggested that individuals faced with risky prospects do not make decisions consistent with expected utility theory. Their work has helped to foster a generation of researchers who are looking at behavioral influences on risky decisions. The research into behavioral influences attempts to account for individuals' limited cognitive capacity, predispositions such as personality characteristics and emotions in decision-making under risk.

Applied Methods and Data

Given findings above forms the theoretical basis for data analysis of a group of equity indexes. A set of statistical metrics and computationally-intensive method for risk measurement were used on equity indexes. An each equity index has undergone a deep risk measure and risk analyses to compare each to another. There were chosen these investment indexes:

- MSCI World Net Return Index is the composite equity index covering countries in the developed markets. The index is capitalizations weighted.
- MSCI High Dividend Yield Index Net Return is the composite equity index covering countries in the developed markets. The index is capitalizations weighted. Securities entering the index must have a dividend yield which is at least 30% higher than the MSCI World Net Return Index yield.
- The MSCI World Value Weighted Index is based on a traditional market cap weighted parent index and re-weights each security of the parent index to emphasize stocks with lower valuations. Index weights are determined using accounting data sales, book value, earnings and cash earnings rather than market prices.
- STOXX Global Select Dividend 100 Net Return is the composite equity index covering countries in the developed markets. Companies are selected on the basis of dividend criteria and the weighting of the companies in the index is purely based on dividends.
- Natural Monopoly Index 30 Infrastructure Global Net Return is the composite equity index covering liquid and tradable exposure to 30 companies around the world which provide basic infrastructure facilities. These companies are natural monopolies.
- The FTSE EPRA/NAREIT Developed Plus Index is designed to track the performance of listed real estate companies and REITS worldwide. The index represents stocks that have a one-year forecast dividend yield of 2% or greater. The index is then weighted by market capitalisation in line with the free-float adjusted EPRA/NAREIT Developed Index.

There were obtained 64 quarterly data per each index (period 1q1999-4q2014) only, therefore were used some robust statistical methods. It means that statistical methods aim at constructing statistical procedures that are stable (robust) even when the underlying model is not perfectly satisfied by the available dataset. A typical example for the assumed model is the presence of outliers – observations that are very different from the rest of the data.

Outliers are “bad” data in the sense that they deviate from the pattern set by the majority of data (Huber 1981, Hampel et al. 1986). Hence, they tend to obscure its generic flow and may lack explanatory and predictive power regarding the generic portion of the data. Robust models focus on the statistical properties of the bulk of the data without being distracted by outliers, while in classical models all data equally participate in the analysis. Classical estimators that assign equal importance to all available data are highly sensitive to outliers. Therefore, in the presence of just a few extreme losses, classical analysis can produce arbitrarily large estimates of mean, variance, and other statistics. Bassett et al. (2004) investigate the performance of portfolio return distribution using robust and quantile-based methods, and conclude that the resulting forecasts outperform those under a conventional classical analysis. Perret-Gentil and Victoria-Feser (2005) used robust estimates for mean and the covariance matrix in the mean-variance portfolio selection problem. They showed that the robust portfolio outperforms the classical one, as the outlying observations (that account for 12.5% of the dataset) can have serious influence on portfolio selection under the classical approach. This trimmed method is applied because some indexes lead to skewed distributions and there are extreme values. The same purposes, i.e. the presence of skewed distributions and extreme values, led to use the interquartile range (by practitioner’s hint for a normal distribution is approximately equal to $1,35 \times \text{standard deviation}$). Another method which was used for estimating set of risk parameters was computationally-intensive method bootstrap due “eliminating” extreme values and the problem of short time series data. There were made 10000 bootstrap samples and computed statistics.

Realizations

Firstly was realized an explanatory data analyse of all indices (quarterly data expressed in €), the results are shown in Figure 1. According the descriptive data analysis one could say that medians are greater than means and trimmed means (12,5%), close values of medias and trimmed means are typical for symetry distributions that is why Box and Whiskers plots were made (Graph 1). Comparing standard deviations to interquartile ranges/1,35 is different for Dow Jones Brookfield Global Infrastructure Index the standard deviation is less than interquartile ranges/1,35 only for this index, this suggests a close quartiles values of the index, only this index has positive Lower quartile among equity indices.. This fact suggests that downside risk should be lower than the other equity indices. In addition, kurtosis statistics show that the distributions have fatter tails than normally distributed variables.

	<i>Average</i>	<i>Median</i>	<i>12% Trimmed mean</i>	<i>12% Winsorized mean</i>	<i>Standard deviation</i>
MSCI_HDY	1,58871	2,75	2,38633	2,10161	8,33608
MSCI_W_Value	1,22097	2,5	1,96367	1,64839	8,65728
MSCI_World	1,28387	3,3	2,09762	1,77419	8,86803
NMX	2,85161	3,6	3,39584	3,20484	7,13917
REIT	2,53387	4,4	3,14788	2,54839	10,0241
STOXX_100_SD	2,94516	4,0	3,48065	3,16129	8,77501

	<i>Coeff. of variation</i>	<i>12% Winsorized sigma</i>	<i>MAD</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Range</i>
MSCI_HDY	524,707%	6,49571	3,95	-21,6	19,4	41,0
MSCI_W_Value	709,051%	7,25085	4,95	-19,7	16,2	35,9
MSCI_World	690,726%	7,30022	5,1	-20,7	23,7	44,4
NMX	250,356%	6,03981	4,75	-19,5	15,6	35,1
REIT	395,602%	8,24368	5,4	-31,9	28,5	60,4
STOXX_100_SD	297,947%	6,48033	4,45	-28,7	22,0	50,7

	<i>Lower quartile</i>	<i>Upper quartile</i>	<i>Interquartile range</i>	<i>Std. skewness</i>	<i>Std. Kurtosis</i>
MSCI_HDY	-2,5	6,5	9,0	-2,51022	1,30081
MSCI_W_Value	-4,7	6,9	11,6	-2,28669	0,431457
MSCI_World	-3,2	6,4	9,6	-2,03531	1,12983
NMX	-1,5	7,8	9,3	-2,58715	1,7044
REIT	-3,2	9,2	12,4	-2,12111	2,50706
STOXX_100_SD	-1,6	8,2	9,8	-2,6373	3,57095

	<i>MSCI_HDY</i>	<i>MSCI_W_Val ue</i>	<i>MSCI_World</i>	<i>NMX</i>	<i>REIT</i>	<i>STOXX_100_S D</i>
Average	1,58871	1,22097	1,28387	2,85161	2,53387	2,94516

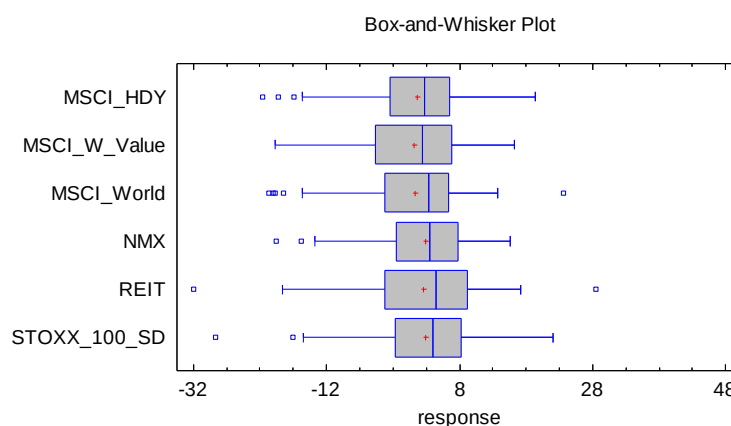
Median	2,75	2,5	3,3	3,6	4,4	4,0
12% Trimmed mean	2,38633	1,96367	2,09762	3,39584	3,14788	3,48065
12% Winsorized mean	2,10161	1,64839	1,77419	3,20484	2,54839	3,16129
Standard deviation	8,33608	8,65728	8,86803	7,13917	10,0241	8,77501
12% Winsorized sigma	6,49571	7,25085	7,30022	6,03981	8,24368	6,48033
MAD	3,95	4,95	5,1	4,75	5,4	4,45
Minimum	-21,6	-19,7	-20,7	-19,5	-31,9	-28,7
Maximum	19,4	16,2	23,7	15,6	28,5	22,0
Range	41,0	35,9	44,4	35,1	60,4	50,7
Lower quartile	-2,5	-4,7	-3,2	-1,5	-3,2	-1,6
Upper quartile	6,5	6,9	6,4	7,8	9,2	8,2
Std. Skewness	-2,51022	-2,28669	-2,03531	-2,58715	-2,12111	-2,6373
Std. Kurtosis	1,30081	0,431457	1,12983	1,7044	2,50706	3,57095

Source: authors' research

Figure 1 Summary statistics of equity indices (quarterly data)

Figure 1 shows summary statistics for each of the selected data variables. It includes measures of central tendency, measures of variability, and measures of shape. Of particular interest here are the standardized skewness and standardized kurtosis, which can be used to determine whether the sample comes from a normal distribution. Values of these statistics outside the range of -2 to +2 indicate significant departures from normality, which would tend to invalidate many of the statistical procedures normally applied to this data. The following variables show standardized kurtosis values outside the expected range: REIT and STOXX_100_SD.

Next the related Box and Whiskers plots were made and results are shown in Figure 2 .



Source: authors' research

Figure 2 Box and Whiskers plot

According Box and Whiskers plots are evident outliers in nearly each equity index, mainly negative values. Therefore the standard deviation to represent risk of these indices can be misleading and robust procedures will be used for risk estimation. For comparison were calculated annualized summary statistics of equity indices, firstly with using standard deviation and enumerating Sharpe ratio (see Figure 3).

	<i>MSCI_World</i>	<i>MSCI_W_Value</i>	<i>MSCI_HDY</i>	<i>STOXX_100_SD</i>	<i>NMX</i>	<i>REIT</i>
Expected Return	5,12	4,88	6,32	11,76	11,4	10,12
Standard Deviation	17,72	17,3	16,66	17,54	14,28	20,02
Sharpe ratio+	0,148	0,138	0,229	0,528	0,623	0,381

+risk free rate is set to 2,5%

Source: authors' research

Figure 3 Annualized summary statistics of equity indices

Finally were calculated estimations of annualized summary statistics of indices with using a bootstrap method for estimation of downside deviation (below-target semivariance) and other statistics (see Figure 4).

	MSCI_World	MSCI_W_Value	MSCI_HDY	STOXX_100_SD	NMX	REIT
Expected Return	5,2	4,85	5,3	11,35	11,75	10,2
Median	6,25	5,9	6,25	12,45	12,7	11,2
Standard Deviation	17,05	16,6	15,7	16,65	13,8	19,3
Downside Deviation*	12,5	12,45	11,45	9,1	6,85	11,45
prct5%	-24,85	-24,45	-22,2	-18,65	-12,85	-23,75
prct25%	-5,9	-6,05	-4,95	1,05	2,9	-2,15
prct75%	17,15	16,65	16,25	22,6	21,45	23,5
prct95%	31,3	29,95	29,4	36,8	32,65	40,3
Sortino ratio*	0,016	-0,012	0,026	0,698	0,985	0,454

*target is set to 5%

Source: authors' research

Figure 4 Bootstrapped estimations of annualized summary statistics of equity indices

Comparing standard deviation with downside deviation, is clear that downside deviation of Natural Monopoly Index is one half of standard deviation, for the rest of indexes downside deviation are much more than half of standard deviation. Among bootstrapped statistics were calculated percentiles estimations, the 5%percentile should be taken as a proxy for a maximu loss. The least loss is showed by Natural Monopoly Index.

Conclusion

According obtaining result in the process of data analysing of indexes there were find these facts:

- Among six equity indexes has Natural Monopoly Index best return to risk ratio (Sharpe and mainly Sortino ratio).
- Among bootstrapped statistics were calculated percentiles estimations, the 5%percentile should be taken as a proxy for a maximu loss. Natural Monopoly Index is less risky than the rest of indexes and has the lowest downside deviation.
- The second best, according risk, is STOXX Global Select Dividend index which has the expected return nearly the same as Natural Monopoly Index, but the risk is higher.

From the investors point of view Natural Monopoly Index is not sufficiently diversified, the energy sectors, utilities, and telecoms are represented in this index only therefore is better to invest into more broadly diversified index as STOXX Global Select Dividend index. The difference in the risk indexes is also due to the fact that the period covers two periods when financial stocks fared very badly (September 2001- June 2002 and September 2008 - March 2009).

Investors who want increase a potential return and have worries about losing a value of invested capital should invest mainly into equity indexes which have relatively small downside deviation (among the equity indexes). According these findings there are two type of indexes and there are: Natural Monopoly Index and STOXX Global Select Dividend. STOXX Global Select Dividend could be used as a regular income due the high dividend ratio.

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Suitable Models for Seasonal and Trend Time Series Forecasting

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Abstract

Purpose of the article is to compare suitable method for time series forecasting, especially the method of seasonal and trend time series decomposition and neural network prediction and use of methods defined by Box and Jenkins (Box-Jenkins models), such as ARIMA or SARIMA. For the analysis data from the area of wholesale trade with connecting material is used.

Methodology/methods used in the paper consists of time series analysis, such as seasonal and trend decomposition using time series adjustment from the effect of calendar variations, decomposition of multiplicative time-series model, prediction with neural networks and Box-Jenkins autoregressive integrated moving average models. Last but not least it is worth noting deductive quantitative methods for research and data analysis using graphs.

Scientific aim is to compare the effectiveness of traditional statistical models with artificial neural networks models. Autoregressive integrated moving average model is recently very popular linear method for time series prediction. Last research activities in forecasting with artificial neural networks show that the combination of time series decomposition and further prediction with artificial neural network can also be a suitable method for this purpose.

Findings of the research show that artificial neural networks models can be a promising alternative to the traditional linear models.

Conclusions (limits, implications etc) resulting from the paper are beneficial for further research. The conducted research suggests methods of time series analysis and decomposition, artificial neural networks and Box-Jenkins models are suitable instruments for seasonal and trend time series forecasting. The article presents selected methods as very useful and bringing many opportunities for further research.

Keywords: Time series, Box-Jenkins models, forecasting, neural network

JEL Classification: C150, C450, L810

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Introduction

Time series can be found almost everywhere in the world that surrounds us. They are data arising from temporally ordered observations, and therefore their important characteristic is that they are ordered in time. Examples of time series are: a series of temperatures taken at a certain place (in climatology), a seismic record (in geophysics), development of the population of a certain area, the annual production volumes of an industrial enterprise.

The time series itself provides important information on how the index has developed over a certain period of time. Our task is to describe this development and predict the future behavior of the index. The time series analysis will make it possible to understand the mechanism by which the data observed is being generated (Cipra, 1986).

Accurate forecasting of trend and seasonal time series represents an important basis for further management decision-making in such areas as retail, marketing, inventory management, and many others sectors in business. This is why time series analysis, modeling, and prediction are significant research topics with many practical applications.

The paper presents the effectivity inquiry of artificial neural network modelling and forecasting seasonal and trend time series including comparison with the Box-Jenkins autoregressive integrated moving average models (ARIMA). There are several methods utilized in the research: time series analysis, data preprocessing by deseasonalization and detrending of the time series and data transformation to standardized form in order to achieve consistent result while using neural network forecasting. MS Office Excel was used for time series analysis, MathWorks MATLAB Neural Network Time Series Tool was used for time series neural network forecasting and StatSoft STATISTICA was used for ARIMA modeling.

The main objective of this paper is to compare the accuracy of neural network forecasting with prior data preprocessing with predictions with ARIMA model.

1 Studies in Time Series Forecasting

The study of various model situations, focus on simulating conditions, searching for outcomes, optimal solutions, and so on are among the most important current trends. For example, McNelis in his paper (McNelis, 2003) applies the neural network methodology to inflation forecasting in the Euro-area and the USA.

The modeling of phenomena which arise from economic reality and are described by statistical data is possible thanks to methods based predominantly on branches of mathematics such as statistics, numerical methods, operational research, linear and dynamic programming, optimization, etc. (see, for example, (Novotná, 2012) or (Novotná, 2014)).

The study of various model situations, focus on simulating conditions, searching for outcomes, optimal solutions, and so on are among the most important current trends. The paper Ioana (Ioana et al., 2010) presents a new concept for fuzzy logic in economic processes. In his paper Zhang (Zhang, 2012), investigated the sensitivity of estimated technical efficiency scores by different methods including the stochastic distance function frontier.

For the modeling of seasonal and trend time series, removal of seasonal variations by the seasonal adjustment method is traditionally used. The model is then sealed back for prediction purposes using the seasonal influences detected. The classical process of decontamination from seasonal influences consists in dividing the time series into the trend, seasonal, and random component, in order to free the time series from the seasonal component, while keeping the trend component, or the cyclic one, if it is present, in the model. Thus, the first phase of the process only concerns seasonal periodicity. A seasonally adjusted time series is then used for a comparison of successive data in the time series, and therefore, for operative economic analysis, time series need to be seasonally adjusted (Seger, 1995). Therefore, the seasonal decomposition of a time series is generally considered as an efficient method for time series modeling (Gardner and McKenzie, 1989).

Nelson (Nelson, 1999) studies the question whether seasonal decontamination of data is necessary for making correct predictions using neural networks. It has been confirmed by research that if data contained a seasonal component, prediction using neural networks was much more accurate than prediction using data which had not been deseasonalized. The same result was obtained Hansen and Nelson (Hansen and Nelson, 2003) in their research into time-series forecasting using artificial neural networks and ARIMA models.

The problem of modeling a time series with a seasonal and trend component was discussed by Zhang and Qi (Zhang and Qi, 2005) in their study on the effectiveness of data preprocessing, including deseasonalization and detrending, on neural network modeling and forecasting performance. The study compares secondary data obtained from retailers and data obtained by simulation with results based on using the Box-Jenkins seasonal auto-regressive integrated moving average models. It was found that by using detrending and deseasonalization, neural networks can be used to dramatically reduce forecasting errors. In contrast, when unprocessed raw data are used, the neural network is unable to capture the time series behavior. The best prediction results were obtained for a time series which had been both deseasonalized and detrended. Research shows that neural networks with both detrending and deseasonalization are able to significantly outperform seasonal ARIMA models in out-of-sample forecasting. Without appropriate data preprocessing, NN may yield much worse forecasting performance than ARIMA models.

Artificial neural network models have been used to solve the demand forecasting and production scheduling problem successfully. In their paper, Gaafar and Choueiki (Gaafar and Choueiki, 2000) applied a neural network model to a lot-sizing problem which is part of Material Requirements Planning (MRP) for the case of deterministic time-varying demand over a fixed planning horizon.

Another study using the artificial neural network structure for time-series forecasting was presented by Hamzaçebi (Hamzaçebi, 2008). The results from the modeled artificial neural network were compared with the traditional statistical methods, which proved that the proposed model comes with a lower prediction error than other methods.

2 Time Series Analysis

The time series is a sequence of materially and spatially comparable observations (data) which are uniquely ordered from the time point of view. From the decisive time point of view we distinguish between interval and moment time series.

The following study analyzes an interval time series where the size of the index depends on the length of the interval over which the index is observed. It follows from the character of the interval indexes that due to a possible comparison distortion, the indexes should refer to intervals of equal length. Often, time series cannot be compared even for months of equal length, because they may differ in respect of working days. To ensure comparability, all periods of time must be recalculated to a unit time interval. This operation is called time series decontamination from the effects of calendar variations.

Data decontaminated for working days can be calculated as follows:

$$y_t^{(0)} = y_t \frac{\bar{p}_t}{p_t} \quad (1)$$

where p_t – number of working days in the corresponding partial period

$\bar{p}_t$ – average number of days in the same period.

Approaches to time series modelling

2.1 Classical (formal) model

The model is based on the decomposition of the time series into four components, in particular the trend component (T_t), seasonal component (S_t), cyclical component (C_t) and random component ($\mathcal{E}_t$).

By a *trend* we mean a long-term tendency in the behavior of the index observed. During the period of observation, we may observe long-term growth, long-term decline, or the values may fluctuate around a certain value.

A *seasonal* component is a regularly recurring deviation from the trend component, appearing in the time series with a periodicity shorter than one year. The fluctuation may be caused by seasonal variations or social customs.

A *cyclical* component represents fluctuation around the trend with a period longer than one year. Sometimes the cyclical component is not considered as an independent component, but is part of the trend.

A *random* component is a component which cannot be described as a function of time. It is the component which remains after the trend, the seasonal and the cyclical component have been eliminated. Often, it is a random (stochastic) component and its behaviour can be described probabilistically.

The decomposition itself may be of two types:

Additive decomposition – each component is considered in its real absolute value and is measured in units y_t :

$$y_t = T_t + S_t + C_t + \mathcal{E}_t \quad (2)$$

Multiplicative decomposition – only the trend component is considered in its absolute value, the other components are considered in their relative values to the trend. This type of decomposition is used when the variability of the time series increases or changes in time.

$$y_t = T_t * S_t * C_t * \mathcal{E}_t \quad (3)$$

2.2 Box-Jenkins methodology

The basic construction element of the time series model is the random component which may consist of correlated random variables. Some of the models used by this methodology are: moving-average model MA, auto-regression model AR, mixed model ARMA, integrated model ARIMA, and seasonal model SARIMA.

In an autoregressive integrated moving average model, the future value of a variable is assumed to be a linear function of several past observations and random errors. The Box-Jenkins methodology includes three iterative steps of model identification, parameter estimation and diagnostic checking. The building process is typically repeated several times until a satisfactory model is finally selected. The final model can then be used for prediction purposes.

2.3 Spectral analysis

The time series is viewed as a mixture of sine and cosine curves with various amplitudes and frequencies. By using special statistical tools, such as the periodogram or spectral density, spectral analysis may help us to get an idea of the representation of each frequency in the time series, which makes it possible to determine the frequencies which are represented most significantly, and explicitly estimate the coefficients of the periodic components corresponding to these frequencies (Seger, 1995).

3 Artificial Neural Network

Artificial neural networks represent an analogy of human thinking. They copy, in simplified form, the principle of human brain. They are often described as a black box, whose inner structure is not known, only the outputs.

Artificial neural networks usually function in two phases. In the first phase, the network appears like an inexperienced person who is trying to set his parameters so that they correspond to the required topology of the network. In the second phase, the network transfers inputs to outputs based on knowledge obtained in the first phase. In each neural network there are defined several types of layers, in particular the input layers, several hidden layers, output layers, and also a method of instruction and knowledge-gaining process.

Neural networks are well-suited to situations in which chance plays a significant role and the deterministic dependencies are so complicated and interrelated that they cannot be analyzed or identified analytically. They are used in the modeling of complicated and irreversible strategic decisions. Neural networks with several hidden layers are suitable for such purposes (Dostál, 2008).

Some authors have recently paid great attention to the so-called neuro-fuzzy systems as a combination of the fuzzy modeling techniques and neural networks. Neuro-fuzzy models combine the advantages of fuzzy logic and neural networks, in particular adaptability, fast convergence, and high accuracy (Shie-Jue and Chen-Sen, 2003).

The most popular is the feed-forward neural network model; typically a three-layer structure is used for forecasting purposes. To process the information received by input nodes, hidden nodes with an appropriate nonlinear transfer function are used.

4 Data and Time Series Analysis

A fasteners wholesale company sales information are used as the input data in the study. The data represents the sales volumes of the highest-turnover type of goods on the company's assortment, as monitored from January 2009 until December 2014.

The data is first aggregated to sales data for each month. All months are then recalculated to a unit time interval and decontaminated for working days. For the following analysis, MS Office Excel was used; the data is shown in the following graph (Figure 1).

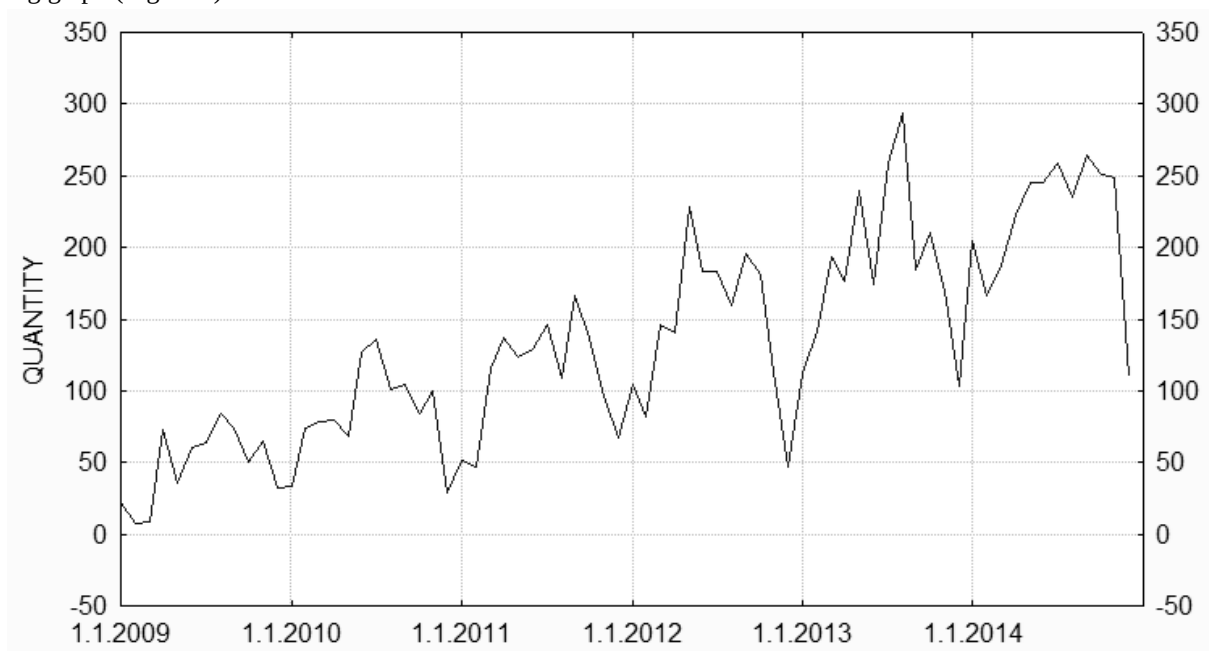


Figure 1 Monthly sales

The graph clearly shows seasonality with a one year period, the trend is linear increasing. As we can see, variability of the values is increasing, and therefore the multiplicative decomposition will be used $y_t = T_t * S_t * C_t * \varepsilon_t$. The multiplicative model is converted to the additive model by taking natural logarithms of both sides of the model:

$$\ln(y_t) = \ln(T_t) + \ln(S_t) + \ln(C_t) + \ln(\varepsilon_t) \quad (4)$$

Seasonal index was detected by using centred moving averages.

The trend is a linear function: $T_t = 25,53 + 2,917t$.

4.1 Data Preprocessing

Three types of data preprocessing based on previous time series decomposition are applied to the original time series: trend adjustment (detrending), seasonal adjustment (deseasonalization), and both detrending and deseasonalization. Four time series, representing the original (O), shown on Fig. 1, detrended (DT), deseasonalized (DS), and both detrended and deseasonalized (DTDS), are available as the input dataset. The mentioned time series are shown in Figure 2 – Figure 4.

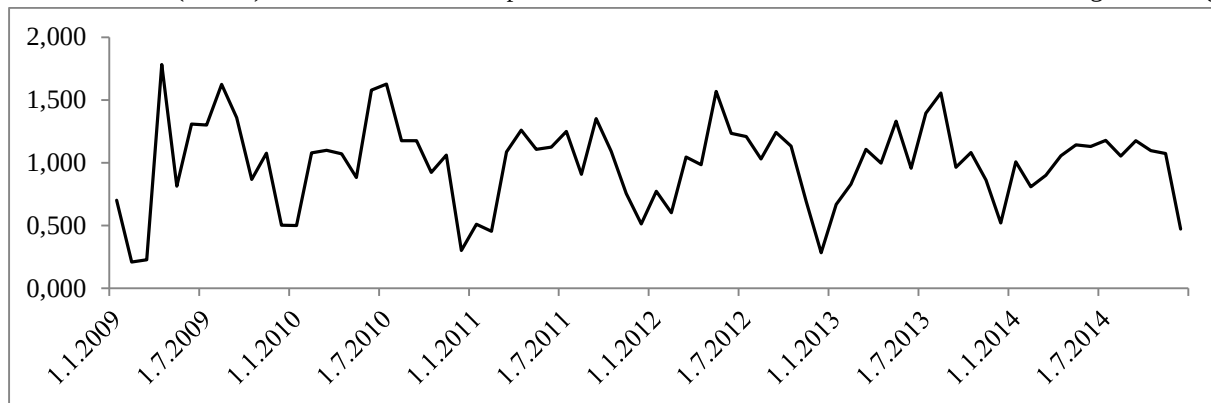


Figure 2 Detrended time series

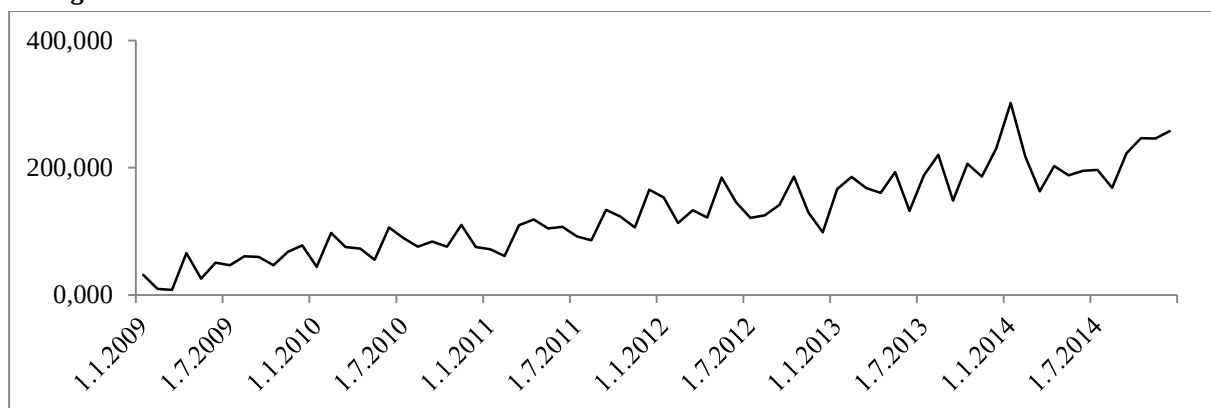


Figure 3 Deseasonalized time series

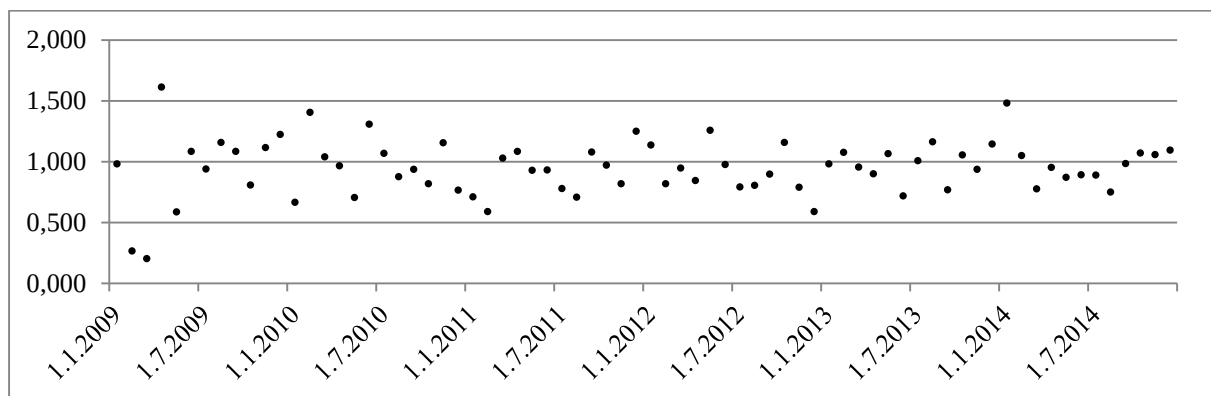


Figure 4 Deseasonalized and detrended time series

4.2 Data Transformation

Preprocessed time series data are subsequently transformed into standardized form in order to achieve consistent result while using ANN. The standardization is done using the following equation.

$$t_i = \frac{x_i - \min(x_i)}{\max(x_i) - \min(x_i)} \quad (5)$$

where x_i is the i th step of the selected time series and t_i is corresponding standardized value within 0 and 1. (Hamzaçebi, 2008)

5 Neural Network Architecture

For solving the time series situation is used MathWorks MATLAB Neural Network Time Series Tool, which can solve a nonlinear time series problem with a dynamic neural network. Nonlinear autoregressive model (NAR) is used from offered models. Monthly time series data, which consists of 72 month's sales figures, is used as an input into neural network model. 100 % target timesteps are randomly divided into training set, validation set and testing set. A nonlinear autoregressive neural network model with one hidden layer and output layer is used, while the number of hidden neurons and number of delays can be defined.

Levenberg-Marquardt backpropagation is used for the neural network training. The performance of in-sample fit and out-of-sample forecast is evaluated by an error measure. Mean Squared Error (MSE) is the average squared difference between outputs and targets. Lower values are better, zero means no error.

6 Results

During the neural network design it is necessary to decide the division of available data to training, validation and testing sample. In the previous research it was proved that 70/15/15 is best among explored so far considering average values of MSE.

Table 1 summarizes the neural network modelling and forecasting results for the simulation data. Data is partitioned into mentioned samples in a ratio of 70/15/15.

Table 1 Simulation result for neural networks

Hidden neurons	Data type	Train	Validation	Testing
5	Q	0,0227	0,0223	0,0137
	DS	0,0102	0,0104	0,0116
	DT	0,0352	0,0292	0,0129
	DSDT	0,0224	0,0174	0,0233
7	Q	0,0237	0,0148	0,0137
	DS	0,0074	0,0253	0,0077
	DT	0,0335	0,0372	0,0284
	DSDT	0,0240	0,0131	0,0132
10	Q	0,0214	0,0272	0,0123
	DS	0,0116	0,0087	0,0070
	DT	0,0277	0,0346	0,0280
	DSDT	0,0201	0,0097	0,0119
12	Q	0,0162	0,0489	0,0112
	DS	0,0070	0,0180	0,0092
	DT	0,0229	0,0258	0,0315
	DSDT	0,0146	0,0105	0,0196
15	Q	0,0155	0,0264	0,0287
	DS	0,0888	0,0195	0,0088
	DT	0,0340	0,0251	0,0279
	DSDT	0,0205	0,0238	0,0215

Several observations can be made from Table 1. First to mention is that the deseasonalised time series show the best results. The finding stems from the fact that across the training, validation and testing data set the deseasonalized time series have the smallest Mean Squared Error. This indicates that according to these results deseasonalization is the most effective data preprocessing approach in modelling and forecasting seasonal time series.

Regarding the number of hidden neurons, neural networks with 10 hidden neurons exhibit the smallest errors.

Table 2 Simulation result for neural networks and ARIMA

Method	Data type	MSE
ANN with 10 hidden neurons	Q	0,0123
	DS	0,0070
	DT	0,0280
	DSDT	0,0119
ARIMA	Q	0,0059

From Table 2 we can see that ARIMA model has smaller Mean Squared Error than the ANN. Therefore for the time series with seasonal and trend pattern may ARIMA be more appropriate forecasting method.

On the other hand results from the prediction of deseasonalized time series using ANN are very close to results of ARIMA model and this is proving to be also a suitable method for prediction.

Conclusion

The paper compares suitable method for time series forecasting. In the paper methods of time series seasonal and trend decomposition, artificial neural networks forecasting and Box and Jenkins methodology is used.

ANN and ARIMA models effectivity is investigated with real data sourcing from a fasteners wholesale company sales volumes. In this paper the time series analysis is performed, consequently the data is preprocessed using the deseasonalization and detrending of the time series and then, before the forecasting using artificial neural network the data is transformed into standardized form. ARIMA model was constructed and evaluated for a comparison with ANN models.

Research results indicate that the best artificial neural network performance is reached using only deseasonalization. Further we found out that ARIMA models shows slightly better results than artificial neural network models with deseasonalized time series.

The conducted research suggests methods of time series analysis and decomposition, artificial neural networks and Box-Jenkins models as suitable instruments for seasonal and trend time series forecasting. The article presents selected methods as very useful and bringing many opportunities for further research.

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A Methodology for Selecting Portfolios of Projects

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Abstract

Purpose of the article In these day's of rapid changes companies very often make the investment in the form of projects. The paper proposes methodology for selecting portfolios of projects.

Methodology/methods The paper is using methods from the field of operations research: the ANP method, the DEMATEL method and linear programming. The ANP method is suitable for the determination of priorities in network systems with different types of dependencies between the elements of the system. The DEMATEL method is used in this methodology to formulate the structure of relationships between the criteria of the system and obtain the criteria importance in the system. Using linear programming is possible to find out optimal way for a project running regarding resource limits.

Scientific aim The methodology is based on theoretical knowledge acquired in the specialized literature and consultations with experts from academia and business practice. The starting point is using methods which allow a high degree of flexibility in solving problems. Methodology can be modified according to changing requirements and needs of company.

Findings The methodology is based on structured interviews with branch experts. It was found that the main emphasis in deciding the project is put on methods of financial investment evaluation. Many companies miss a comprehensive selection methodology of investment projects.

Conclusions (limits, implications etc) The proposed procedure includes risk assessment, dynamics and the time factor. It allows a high degree of flexibility in problem solving. Methodology is applicable with minor changes in most types of companies carrying project portfolio management. The methodology will be in detail tested on collected data from the engineering branch (machinery) companies based in Usti nad Labem region. It will produce an impact on the specification of the theoretical foundation of the methodology.

Keywords: ANP method, DEMATEL, linear programming, operations research, project portfolio management, investment

JEL Classification: O22, C44

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Introduction

Most companies do not control only one or two projects, but they take care about a large number of projects at the same time. We can call it portfolio. Portfolio projects (PP) can be defined as a group of projects that are realized in the same organization. Unlike project management of only one project portfolio of projects have to do management at a higher hierarchical level. It is necessary to oversee the entire project portfolio, take into account the previous experience, on current projects, on organizational environment and future organizational plans (Engwall, 2003). For this reason, information exchange, resource management and coordination of project selection become even more important for the portfolio of projects rather than for an individual project.

Into the portfolio are selected projects that fulfill the minimum requirements of clearly defined objective criteria. At the same time, it is important to take account of the amount and structure of resources. These projects compete with each other for limited resources, which are available to the company. One of the most important parts of PPM is therefore redistribution of resources between single projects (Blichtfeld & Eskerod, 2008).

In this case, using classical project management seems to be insufficient. Project Portfolio Management (PPM) includes selecting corporate strategy suitable projects and programs. By portfolio company can control and manage risks in projects. The PPM allows managing all projects in the portfolio completely which is the biggest advantage. In next step we can achieve a better return on investment. The main objective of PPM is according to (Heising, 2012) maximize the value of the portfolio, its balance and connection with the strategy. According to (Meskendahl, 2010) it is important to include the success of a project corresponding with the compliance time, quality, budget and customer satisfaction, as well as using of relationships (dependencies) between projects within the portfolio in PPM. Portfolio provides greater benefits, when a set of projects is controlled in coordinated way (Platje, et al., 1994). The variety of portfolios requires higher coordination due to their potential interdependencies and sizes, but also leads to better utilization of synergies, e.g. regarding knowledge, or sharing among customers (Teller et al., 2012; Voss & Kock, 2013).

The paper is structured as follows. After introduction, where is provided an overview of the of project portfolio management, we present fundamentals of methodology – hypothesis and methods. In the next section, we explain individual phases of the methodology. Then we analyse all clusters of ANP model including content each clusters. In the discussion, we evaluate hypotheses and their influence on creation methodology. Subsequently in conclusion, we assess the current state of work on methodology and outline future research opportunities.

1 Fundamentals of Methodology

This chapter contains the basic assumptions and basic methods used in the presented issues.

1.1 Formulation of Hypothesis

The starting point for the methodology forming was studying the professional literature. Following hypotheses are the result of studying and applications of available knowledge.

Hypothesis A: Currently, many companies don't use a methodology for complex evaluation of the projects portfolio.

Hypothesis B: The evaluation has to include relations between projects.

Hypothesis C: Analysis and subsequent optimization of limited resources is very important for portfolio project management.

Hypothesis D: Only a large number of criteria provide objective selection.

Hypothesis E: It is very important to know the priority of criteria in the system.

The questionnaire survey was selected as a research method to verify the above hypothesis. Companies have been addressed according to their field of specialization.

Due to the low response rate was carried out to fill in informations through structured interviews with managers at several companies in Ústí nad Labem region. In addition to experts from industry were contacted several experts from academics too.

The sample had a final size about 30 respondents.

1.2 The DEMATEL Method

The DEMATEL method (the Decision Making Trial and Evaluation Laboratory) is an effective method to analyze relations (direct and indirect) between different parts of the system in relation to the type and severity). The DEMATEL method is applicable to the evaluation of many factors entering into portfolio assessment and to identify their relationships and evaluate their importance. (Altuntas & Dereli, 2014) propose the use of a methodology for setting priorities in the portfolio of investment projects from the perspective of the government as the creator of incentives for investors. (Yang et al., 2013) propose to use a combination of methods Vikor, ANP and DEMATEL for risk assessment and management of information security. (Yang & Tzeng, 2011) combines DEMATEL and ANP method.

The result is to capture the structure of complex relationships between system criteria and capture the level of influence of these criteria. These levels are then used to calculate the supermatrix ANP. Solution procedure is based on knowledge of the literature such (Fiala, 2013).

1.3 The ANP Method

The ANP method (Analytic Network Process) network is a generalization of AHP (Analytic Hierarchy Process) method. The analytical network process (ANP) is a method that allows the system to include all possible interdependence and feedback. Structure of ANP model is described by clusters of elements and their interdependencies. Model ANP might reach several levels; the individual elements might be clusters of clusters of the next level etc. It is suitable for expressing dependencies within the network structures. Clusters model may represent variants, decision-makers, evaluation criteria and resources needed for implementation.

The method is very well applicable to the inclusion in the evaluation and selection of project interdependencies and larger number of criteria. (Aragones-Beltran et al., 2014) define the use of AHP and ANP methods by deciding on investment projects of solar-thermal power plants. (Jung & Seo, 2010) are using methods for assessing R & D projects. (Yang & Tzeng, 2011) are adding DEMATEL to ANP method. ANP method used for obtaining the arithmetic average weighted supermatrix therefore ignores the different weights of individual criteria. Solving the model is described in (Saaty, 2008). Furthermore, the author supplements the basic model with two sub-networks such as a dynamic flow of projects and a time-dependent source.

1.4 The Linear Programming

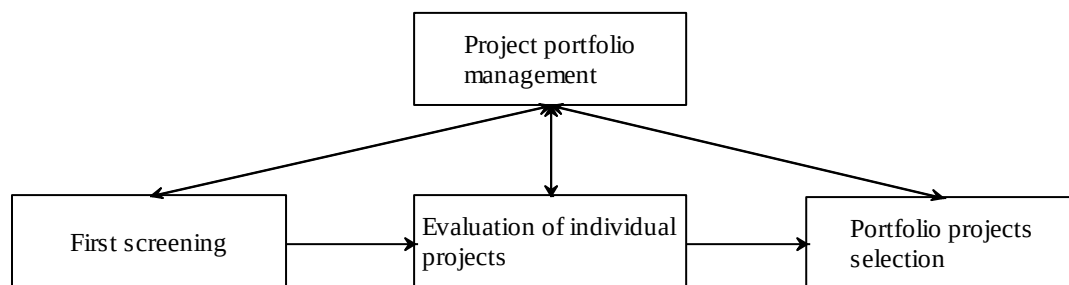
The linear programming is defined as a problem of maximizing or minimizing a linear function under fixed constraints. The constraints may be equalities or inequalities. For more information read e.g. (Lewis, 2008). The result of linear programming is an optimal solution.

Linear programming is used to formulate the task finding the optimal solution projects with resource limits. Resources, which are not available in the enough quantity, that means they will not cover the implementation of all projects selected, are entering into the solution of this problem as individual constraints. Conversely, the resources that are available in sufficient quantity for all selected projects do not enter into the problem at all.

In proposed methodology, we can use the size of the net present value of the selected projects as coefficients of the objective function. In this case we will maximize linear function.

2 Performance of Methodology

Based on the theoretical knowledge and on practical based consultations, we can propose evaluation methodology for investment projects in engineering companies. In its simplified form, it is possible to build a portfolio illustrated in Figure One.



Source: Own work, 2014

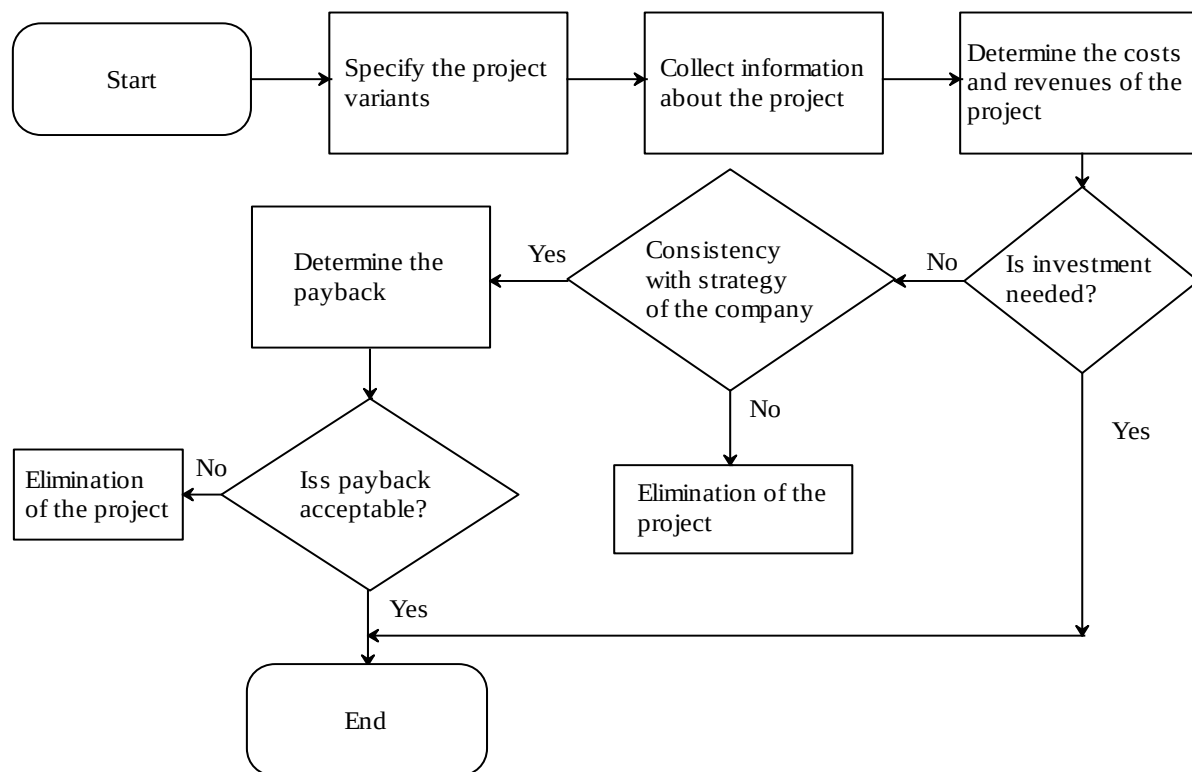
Figure 9 Scheme to build a portfolio

2.1 First Screening

The first screening is designed especially to identify potential projects. This stage also contains a collection of basic information about the project, which will be used for evaluation in the upcoming stages of procedure. It is necessary to sort the collected information and select relevant data necessary for the evaluation of the project. At the same time we establish strategic goals for the project, which defines the purpose of the project objectives and achievement leading activities. The logical framework method is useful to clearly define the key characteristics of the project. At this stage Project Card is created comprising all informations that could be needed in various stages of the methodology.

Another important part of this phase is to identify the individual variants of the project. Each project can have multiple options (variants) of its implementation. The task of the initial screening is to identify these alternatives and collect information about them.

Projects are divided on necessary, important and free projects for company. Necessary projects are done automatically in next stages of evaluation. Strategy non-corresponding projects are discarded. At the mean while fast indicative investment valuation is carried out. The company evaluates feasibility of the investment according (to propřed limits) investment conditions limit. Companies use static methods of investment especially playback method very often. If the result does not correspond to company demands, then the project is eliminated. Procedure of First screening is shown in Figure Two.



Source: Own work, 2014

Figure 10 Scheme of the first screening implementation

2.2 Evaluation of Individual Projects

At this step, it is necessary to perform risk analysis and assessment of the project in terms of acceptability from the perspective of financial criteria. Result of this stage is the pre-selection of projects for the subsequent management of the projects selection in the portfolio. Simultaneously it is needed to prevent entry several alternatives of one project into the portfolio selection.

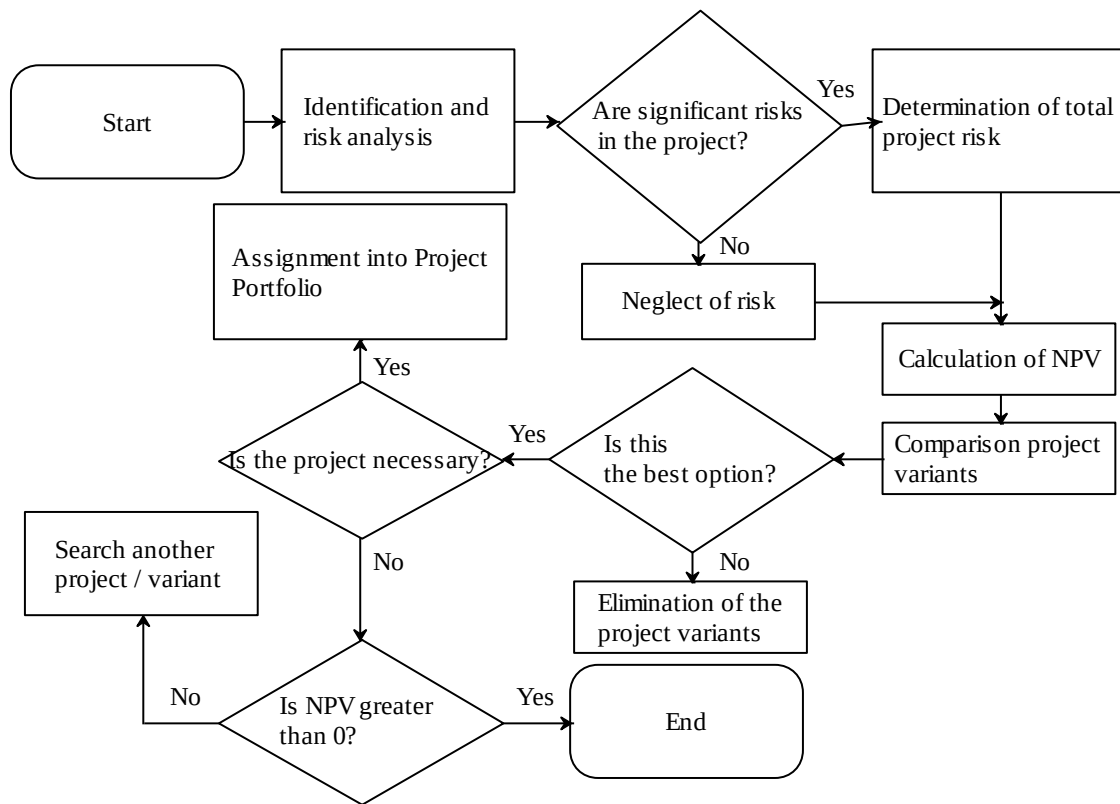
Identification and risk analysis is providing thought assistance of brainstorming and checklists. In case of new technologies or production projects for the company is going to be used the FMEA analysis is highly recommended to be done. FMEA (Failure Mode Effects Analysis) is able to identify threats, risks in the stage of designing, planning, this leads to time and investments saving in product or process development.

All risks are subsequently assembled in the threats, risk register. It helps to proceed evaluation, whether there are significant project risks. This is done by using Pareto analysis. As serious threats we can consider threats leading to projects cost increase, lead time extension and quality reduction.

The weighted-average number of risks and its relevancy determine overall risk, which is going to be one of the most important criterion for selecting projects in portfolio.

Another important part of the evaluation of individual projects is to assess the possible options and their effectiveness using dynamic methods. These methods use time in its calculations. By comparing individual variants of the project, it is necessary to consider other aspects such as technical solution and so. The result is a selection of only one alternative among several possible solutions of the project.

At this stage all necessary projects (all the chosen ones) are moved into the necessary portfolio. Further evaluation is focused on the rest of the project types. Procedure of individual projects evaluation is shown in Figure Three.



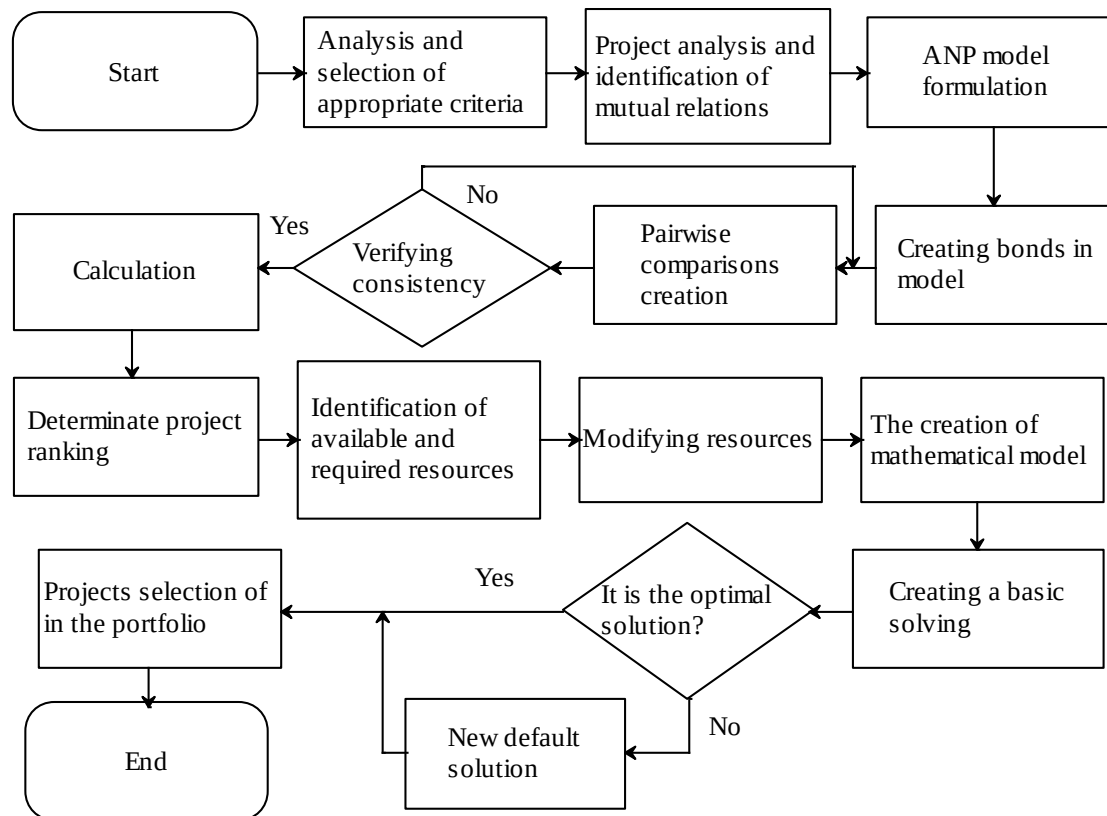
Source: Own work, 2014

Figure 11 Scheme of individual projects evaluation

2.3 Portfolio Projects Selection

All the rest of acceptable projects are selected using mutual comparison. The portfolio selection is based on the evaluation criteria and depends on the availability of resources. It includes a combination of objective and subjective criteria. Among the objective criteria we can involve eg. required rate of return. Subjective criteria depend on needs of various organizations represented on the selection and subsequent implementation of the project. In order to avoid choice by committee members' criteria it is necessary to establish an objective system of choosing criteria.

Portfolio project selection begins with an analysis of applicable criterias using the DEMATEL method and in the next selection of most suitable ones. At the same time it is important to do analysis of all projects entering in this evaluation phase, notably in terms of their mutual linkages and relations. The DEMATEL method is able to detect and quantify direct and indirect links between projects. Procedure of project selection into project portfolio is shown in Figure Four.



Source: Own work, 2014

Figure 12 Scheme of project selection into project portfolio

In this stage, we can create ANP model. According to the results of DEMATEL method and available information are formulated relationships between clusters and nodes. Selecting experts (security evaluation from different perspectives) realize pairwise comparisons. The calculation is performed after verifying the consistency. The result is a ranking of projects. At the same analysis is required of all projects entering this phase of the evaluation, notably in terms of their relations. DEMATEL method is able to detect and quantify both direct and indirect links between projects.

2.4 Project Portfolio Management

This stage extends to all above-mentioned stages. It combines management in various fields and activities related to the portfolio. The portfolio management is also connected except project selection with termination or suspension of projects depending on environmental changes. It includes risk management, change management, resource management, project management, quality management, financial management, monitoring and control and others areas of management.

It should be included in this phase the selection of all members of the expert groups, whether for project evaluation, identification and assessment of risks, as well as change management, etc.

For the project management is a very important position of portfolio projects manager, which has all the information on completed projects and is authorized to make decisions about them. It is also essential to use the existing management information system in the company in which are available internal economic information, marketing or other character useful for portfolio management.

3 Performance of Cluster

Based on information from the previous stages, we create ANP model. Based on this model are four basic clusters: criteria, resources, time and projects, based on the use of (Fiala, 2014). The aforementioned clusters consist of nodes listed in Table 1. The relations between clusters and nodes are created according to the results of DEMATEL methods and available informations from company. Responsible experts then perform pairwise comparisons. After verifying the consistency, project ranking is calculated.

Table 1 Clusters and nodes ANP model in proposed methodology

Criteria	Resources	Time	Projects
Financial criteria	Energy resources	Project lifetime	Project A
Technical criteria	Financial resources	Duration of the realization	Project B
Economic criteria	Human resources		Project C
General criteria	Hardware and infrastructure		...
	Material resources		

Source: Own work, 2014

3.1 Cluster Criteria

First, criteria entering the evaluation have to be defined. The selection of these criteria is given by entities whose goals and interests are affected by the solution of the problem, then finding the possible impacts of the options, both favorable and unfavorable, and identification of differences between individual variants.

The criteria selection is for the company an opportunity to convert subjective assessment into objective one.

Set of evaluation criteria should meet certain requirements such as completeness, operacionalita, measurability and non-redundance. If the file is incomplete, criteria are not considered from all aspects of the project.

The DEMATEL method could be used to identify the most important and therefore the most appropriate criteria for the company. The method of paired comparisons according to Saaty is used to determine the weighting of the criteria. A team of experts is determined by the project manager.

Paired evaluation of individual criteria carried out by each appointed experts. The resulting data entering the paired comparisons are given by the arithmetic average of all experts.

Cluster criteria are divided into several types: financial, technical, economic and general. Among the financial criteria belongs net present value, savings in labor costs and savings in energy and materials. Technical criteria include plant availability, increase production capacity, requirements or changes assortment reduce scrap. Into economic criteria we can include increased economic efficiency, increase productivity, improving performance or innovation potential. Social criteria include social interventions in areas such as. Improve the working surroundings, enhance occupational safety and environmental protection on the scope of legislative requirements (environmental criteria). The last area criteria includes general criteria such as consistency between strategic and tactical plans, the necessity of the project, the type of project risks, including synergic effects (links to individual projects).

3.2 Cluster Resources

Resources needs for project implementation is another important aspect for methodology. It is necessary to consider the availability of resources in company and the possibility of redistribution between individual projects. The company should also consider keeping some free resources for the future useful project.

The resources are for needs of the proposed methodology divided into energy, financial, human, material resources and technical equipment and infrastructure. We have to identify and analyze all needed resources to individual projects for the successful project selection. At the same time it is necessary to calculate all available internal and external resources across the entire portfolio.

For projects confrontation with available resources we use linear programming. As mentioned above, it is necessary to reduce the available amount of resources by the amount selected for necessary projects resources. Mathematical model is created for the remaining available resources and "other" project. The model is solved using simplex method.

Reallocation of resources using the simplex method is carried out only on projects selected by analyzing ANP. Projects, which are called necessary, are transferred automatically into realization. It is also important to realize that only resources with limited capacity are solved using simplex analysis. (There are not enough resources for realization of all selected projects.)

Sources are changing over time, and it is necessary to catch it in the assessment. It is necessary to re-identify the resources needed and available in different time slots defined in the cluster time. Dynamic conversions right hand side and following complex analysis is required in the event of any change in the amount of available resources.

We can include among energy sources electricity, gas, fossil fuels such as oil, coal, and in some cases water.

Financial resources can be divided into internal and external. Internal source of capital is obtained from internal company sources such as profit after taxes and payment of dividends, retained earnings; depreciation of fixed assets. Conversely, external capital is obtained outside the company. Further splits on their own resources, including contributions

from owners, equity and venture capital; and other sources including banking and commercial loans, advances from customers, liabilities to employees, liabilities to government and other entities, bonds, mortgage bonds, financial leasing, factoring, forfeiting and possible subsidies.

Among the human resources, it is necessary to include all persons involved in the running of the project throughout its life cycle. It is important to consider whether there is sufficient number of experts in project teams, as well as whether a sufficient number of staff involved in the implementation phase of the project.

Hardware and infrastructure is another limiting condition. For example, it is necessary to involve the production capacity of individual equipment during all projects lifetime into the decision.

Material resources include all feedstock necessary for the successful implementation of the project and its subsequent operation. It is necessary to compare the availability of different raw materials on the market and required amount by company.

3.3 Cluster Time

It is necessary to realize the dynamic development of the portfolio, ie. weight of individual parts of clusters may change over time or may enter into a completely new evaluation variables. This methodology works with discrete time. We perform regularly recalculations each paired comparison of all clusters and across at the time in predetermined points.

Time points and thus also the frequency of the evaluation provides a project manager on the basis of previous experience and the situation in the market in a given sector. We recommend to perform these conversions in every important moment in time implemented projects (eg. in individual partial stages of the project, in case of discovery of a new project, in case of a change on the part of available resources), but at least once per quarter.

At the moment, management criteria such as importance can be changed according to the preference such as the focus on specific types of projects or the construction enterprise, etc.

3.4 Cluster Projects

This cluster contains all the projects that have successfully passed the first two stages of the methodology (the first screening and evaluation of individual projects).

It is very important to carefully explore bindings and relations between different projects and to identify possible links between individual projects. As already mentioned we propose to determine the linkages and relations (including synergies) between projects using DEMATEL method. Subsequently, these bonds will be considered and evaluated in pairwise comparisons within the cluster.

Between projects may be following situations:

These relationships are taken into account in pairwise comparisons as follows:

Projects A and B are independent of each other, which means that in the context of pairwise comparisons performed only real ranking one project to another.

Project C follows the Project A (The successor). It means, we have to first implement the project A, then we will implement the project C. Maximum importance (value 10) will add to project A before project C.

Project D precedes project A (The predecessor). It is necessary to realize project D at first and then implement project A. Maximum importance (value 10) will add to project D before project A.

Project E excludes Project A. In this case we do not decide which variant of one project will be better. This issue is addressed in the evaluation of individual projects. We are making decision between two different projects whose realization is not possible in the same time. The reason could be deficiency resources or place etc. At first is necessary to compare these two projects, including their predecessors and successors, and choose a project to implement more appropriate. This project will be then entered into portfolio selection.

4 Discussion

The proposed methodology is based on the professional literature, competitive knowledges and formulated hypotheses. As already mentioned above, the hypotheses were verified using questionnaires and structured interviews. Based on the respondents answers were identified the following facts:

Hypothesis A: Currently, companies don't use a methodology for complex evaluation of the projects portfolio.

According to respondents' answers was found that the companies use to evaluate projects only financial criteria in practice very often. They apply some methods of identification and risk analysis, too. Most of the companies admit non-complex solving of this problem. They evaluate only individual projects, but don't perform a comprehensive assessment of all potential projects together. Confirmation of this hypothesis is the main reason for the formation of the present methodology. It is able to conduct a comprehensive evaluation of the project portfolio.

Hypothesis B: The evaluation has to include relations between projects.

The research results show that, relations between individual projects are very important within the portfolio. These bonds may affect the implementation of projects and their succession. Due to this finding are used methods of ANP and DEMATEL in the methodology. DEMATEL method is used to identify the linkages between projects. ANP method is used for the actual project evaluation and determination of their resulting sequence.

Hypothesis C: Analysis and subsequent optimization of limited resources is very important for portfolio project management.

This hypothesis was confirmed. So, it is included model for linear-programming in the methodology. The linear programming is used for identification of available and required resources and their optimal redistribution between selected projects.

Hypothesis D: Only a large number of criteria provide objective selection.

Hypothesis E: It is very important to know the priority of criteria in the system.

Hypotheses D and E are closely related. For this reason, they will be evaluated together.

Hypothesis D was not confirmed. The number of criteria doesn't affect the quality of results. Conversely, more criteria can cause larger errors.

On the contrary, it has been confirmed that it is very important to know the magnitude of each criteria in the system. It means that hypotheses E was validate. In view of this finding the methodology solves determining the significance of individual criteria and their mutual influences. Therefore, the part of methodology is the selection of applicable criteria for projects evaluation. The DEMATEL method was chosen as the most suitable to solve this problem. It is able to detect and quantify relations between criteria. The results enable to choose criteria, which were used for project selection.

At the same time, a set of criteria was based on respondents' answers. This set includes all criteria entering into DEMATEL analysis. The company decides which criteria will be the best - according to their projects portfolio needs.

Conclusion

The proposed procedure includes risk, dynamics and multi-criteria decision making in its assessment. The starting point is using of methods such as ANP, DEMATEL and linear programming. These methods allow a high degree of flexibility in solving problems. The procedure can be continuously edited and changed according to changing needs and requirements of company. Most of the changes are only possible with the help of changes in the priorities in pairwise comparisons. Simultaneously methodics connects in decision process another important indicator, the scarcity of resources.

In the future, we are working on more sophisticated practical verification methodology. The methodology will be verified on data collected from companies operating in the field of engineering technologies based in Ústí Region. We obtained information about ten investments which will be realize or are in realization now. The data will due their sensitivity be partially modified.

Currently, we perform in cooperation with the company the identification of useful kriteria using DEMATEL method. There will be subsequently search the important links between projects in the same way. All obtained information will be used for the creation of ANP model for the specific situation in the company. The final ranking of projects obtained by the ANP method will be compare with the final distribution of available resources among the various projects. Allocation of resources will be solved using simplex method.

The result of methodology will be portfolio of projects which will soon realized in company. Practical results of verification metodology will subsequently have impact on the theoretical foundations of speciflicated methodology.

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