



*PROCEEDINGS*

*of the 6<sup>th</sup> Global Conference on*

# Managing in Recovering Markets, GCMRM 2015

*Maribor, May 18 – 19, 2015*



Faculty of Economics and Business





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# **Managing in Recovering Markets, GCMRM 2015**

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*Alenka Kavkler and Klavdij Logožar*

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## Foreword

# Dear Authors, esteemed Readers,

It is with deep satisfaction that we write this Foreword to the Proceedings of the 6<sup>th</sup> Global Conference on Managing in Recovering Markets (GCMRM) held at the Faculty of Economics and Business, University of Maribor, Slovenia, from May 18<sup>th</sup> till May 19<sup>th</sup>, 2015. GCMRM continues a tradition of bringing together researchers, academics, and professionals. The scientific Conference was attended by almost 100 participants from 16 different countries, experts in economic and business sciences. The Conference particularly encouraged the interaction of younger academics in early career stages with the more established academic community and provided the opportunity for all participants to present and discuss new and current work. Their contributions helped to make the Conference as outstanding as it was.

The papers contributed the most recent scientific knowledge in the field of Management and Globalisation, Finance and Banking, Accounting and Auditing, International Economics and Business, Logistics and Tourism, Quantitative Economic and Business Methods, E-Business and Information Management, Corporate Governance and Strategic Management, Current Issues in Economic Policy, Marketing, and Entrepreneurship Ecosystems, Sustainability and Growth Oriented Entrepreneurship. Over 50 papers were delivered and presentations made on these and related topics. Besides contributions on recent advances in the covered fields, the conference also provided a venue for dialogue between theory, applications, and for academic discussions.

The purpose of this volume is to reflect scientific activities during the 6<sup>th</sup> Global Conference on Managing in Recovering Markets. A selection of conference papers is available in these Proceedings. All papers went through the double blind refereeing process. The list of all referees is given at the beginning of the text.

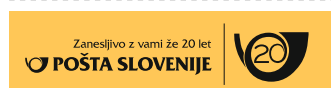
We would like to express our thanks to all who helped with the preparation of the conference. We would not have succeeded in attracting so many distinguished speakers from Slovenia and from abroad without the effort of several employees at the Faculty of Economics and Business. Our gratitude also goes to the referees who raised the quality of the conference with their useful suggestions and to session chairs for their engagement. Last but not least, we thank all authors and participants for their contributions. These Proceedings will provide an excellent reference book by stimulating further study and research in all conference areas.

Maribor, June 2015

*Alenka Kavkler and Klavdij Logožar*

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# Corporate Governance Structure and Firm Performance: The Case of Libya

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## *ABSTRACT*

Corporate governance (CG) and its influence on company performance is a widely discussed issue in economic literature. The seminal work of Jensen and Meckling (1976) proposed a theory of the firm based upon conflicts of interest between different contracting parties namely, shareholders, corporate managers, and debt holders. A literature has developed to clarify both the nature of these conflicts and the means by which they may be resolved. Although the literature is showing that a large number of studies have examined the subject in the context of developed and developing countries, the paper is one of the first attempts to fill the gap in the literature relating to the CG system in Libya. The data collected from thirty Libyan companies has been used and series of t-tests was performed to see which corporate governance variables have an influence on company performance, verifying of falsifying the research hypotheses in the process. The work has been completed in difficult conditions in 2014 when, due to complicated political and economic situation in the Libya, several firms have not been willing to provide the information on their corporate structure and governance. Nevertheless the research provides clear insight into differences in CG between individual sectors in Libya.

*Key words:* corporate governance; corporate structure; firm performance; Libya

## CORPORATE GOVERNANCE IN THEORY

Good corporate governance (CG) is the system adopted to direct and manage the business and affairs of a company in order to guarantee that an effective system of CG is established with the most recent vision of the role and responsibilities of the board of directors and the company management. The core of CG is focusing on two important issues: who controls the company, and for what purposes? In other words, the degree of separation of ownership from control is the important question (Shleifer and Vishny, 1997). CG can be defined as the legal system by which companies are directed and controlled (Cadbury, 2000, Stapledon, 1996, Werder and Grundei, 2001). Monks and Minow (2001, p.1) define CG as “...*the relationship among various participants in determining the direction and performance of corporations. The primary participants are 1) the shareholders, 2) the management (led by the chief executive officer), and 3) the board of directors ... Other participants include the employees, customers, suppliers, creditors, and the community*”.

Tricker (1997) defines corporate governance broadly as being concerned with the exercise of power over every type of corporate entity – whether in private or public ownership, large or small, simple or complex; whether family firm, subsidiary or associate company, joint venture in a strategic alliance, government business enterprise, or non-profit enterprise.

There are a number of analyses on the nature of the CG problem with recommended solutions to deal with it. Four key perspectives for the CG problem are recognized: agency theory, transaction cost theory, market myopia theory and stakeholder theory. Later, Keasey, Thompson, and Wright (1997) added a fifth perspective which is the abuse of power theory. Others include the property rights approach, signalling theory, stewardship theory, and resource dependence theory.

After Enron's bankruptcy and the WorldCom scandal, some experts criticized the accounting and auditing profession. The directors of these companies, the boards of directors, and their international audit companies were involved in the financial scandals. As a result, many investors have lost confidence in joint-stock companies, and they have questioned the sufficiency of accounting standards, the efficiency of internal control systems and the independence of auditors.

In 1998 after the Asian financial crisis, the World Bank and the Organization of Economic Cooperation and Development (OECD) started to encourage countries to apply the concept of CG. There have been fewer studies on CG in developing countries, because most developing countries face wide gaps in CG compared to developed countries. In addition, most developing countries' economic and industrial organisations are characterised by the fact that the majority of businesses and corporations in these countries are family-owned enterprises or small and medium sized enterprises (Saidi, 2004).

Fremont and Capaul (2002) conducted a study which focused on the duties and responsibilities of the board of directors, the equitable treatment of shareholders, the role of stakeholders, disclosure and transparency, and the rights of shareholders of companies in fifteen developing countries (Brazil, Croatia, Egypt, Georgia, India, Latvia, Lithuania, Malaysia, Morocco, Philippines, Poland, Romania, South Africa, Turkey, and Zimbabwe). The key findings indicated that none of the assessed countries complied with the OECD principles in all respects. Generally, there was a disagreement between the letter of law and actual practices. The enforcement of shareholders' rights and equitable treatment of shareholders needed strengthening. In most countries surveyed, business transactions traditionally took place on the basis of relationships and trust and little attention was paid to publicly available information. The OECD Principles assume that countries have an efficient legal and regulatory framework in place and that securities regulators have the means and capabilities to enforce the rules and regulations of their capital markets. However, experience in the countries surveyed demonstrated that this is often not the case.

Saidi (2004) examined management practices benchmarked in Lebanon against OECD principles. The survey results indicated that the current judicial system in Lebanon requires reform. Further, the legal system lacks efficiency and consistency in enforcement. Compared to other countries, Lebanese managers need trust that the legal system will support their contracts. The consistency and predictability in the interpretation of laws and procedures falls behind the level attained by Eastern



European and former Soviet Union countries. Moreover, the survey revealed that 10% of senior management's time is spent dealing with government regulations. CG in Lebanon cannot be separated from public governance. So the issues of corruption and bribery should be related to CG. Finally, the survey results pointed to the need for an independent body to monitor the implementation of CG in Lebanon.

World Bank Policy Research (WBPR) in 2004 presented a report which provided an evaluation of Egypt's CG policy framework, enforcement and compliance practices. This report considered current improvement in Egypt's CG regulation and proposed policy recommendations for CG best practice in the country. It also provided investors with a "benchmark against" which to measure CG in Egypt.

Recent research highlights the importance of CG in emerging markets. Several authors (La Porta et al., 2000, La Porta et al., 1998, La Porta et al., 1997) have demonstrated that, across countries, CG is an important factor in financial market development and firm value. They subsequently studied the control structure of the largest 20 publicly traded companies in four East Asian countries as well as 23 other countries around the world. Their evidence firmly supports the insider model for many East Asian economies characterised by the concentrated control of companies by a small number of owners, although less so in Japan and South Korea. Regarding the East Asian crisis, Johnson (2000) showed that country-specific measures of CG perform better than standard macroeconomic variables for explaining the extent of the currency depreciation and stock market decline of emerging markets during the crisis. East Asian CG is widely acknowledged by (Miller et al., 1998) to have originated when Japan experienced a long recession in the early 1990s.

By the end of 1997, this recession had spread to South Korea and a number of South East Asian countries including Malaysia, Indonesia and Singapore. Kim (1998) argues that weak CG in these countries was a significant contributory factor to the economic crisis. Prowse (1998) in his study on comparative CG systems provided a framework for analysing CG issues from an East Asian perspective. Following Prowse's study Ow-Yong and Kooi Guan (2000) provided a background for recent developments in CG in Malaysia. Disclosure and CG in developing countries, such as Malaysia, Singapore, India, Indonesia, and Taiwan have gained reputation. For example, in Singapore, disclosure and CG have been widely recognized as being among the best in Asia, and many observers have attributed the strength of Singapore's economy during the Asian financial crisis to the relatively good disclosure and CG.

Haniffa and Cooke (2002) examined the importance of various CG and cultural (race and education) characteristics, in addition to firm-specific factors, as possible determinants of voluntary disclosures in the annual reports of Malaysian listed corporations. Their regression analysis results indicated a significant association between two CG variables, a chair who is a non-executive director on a board dominated by family members and the extent of voluntary disclosure. This finding has implications for CG policy formulation by the Malaysian Institute of CG.

Suto (2003) conducted an empirical study which analysed the CG structure in Malaysia before and after the financial crisis of 1997. Her results showed that the commitment of banks to finance corporate debt as well as lending increased debt ratios. Increasing ownership by native Malays, both the direct and indirect holding of corporate shares, played no significant role in disciplining corporate management. Further, high dependency on debt led to excessive corporate investment before the crisis. Solomon

(2003) provided empirical evidence on the attitudes of Taiwanese company directors to the role and function of the board of directors in Taiwanese CG. The findings provided a picture of the current state of CG in Taiwan. The results indicated that the board of directors constitutes the most important instrument in Taiwanese CG, and the finding supported the important role played by outside directors in the CG system in Taiwan. In addition, responses supported the agency theory perspective on CG as they considered the presence of outside director improved corporate accountability to shareholders. There was, however, evidence from the study that few companies had created remuneration and audit committees.





Reed (2002) evaluated the new model of CG in India, which is an Anglo-American model, from the perspective of its potential development impact. He focused on three main areas: shareholders, concerns, employment, and growth. The results suggested that the model is not very promising. He commented as follows: *“India, like many developing countries, has been moving towards the adoption of an Anglo-American model of CG in recent years. The impetus for this shift has been a combination of global political-economy pressures and problems arising out of the previous Business House model of governance”* (Reed, 2002, p.266).

(Solomon et al., 2002) outlined the traditional system of CG in South Korea and reviewed the board agenda for CG reform which is currently taking place. The traditional system of CG in South Korea falls into the “insider-dominated” framework, where there is little or no separation of corporate ownership and control. This has been defined as a system of CG in which companies are owned and controlled by a small group of investors, usually owner-families, banks or other corporations (Solomon and Solomon, 1999). Japan also falls into this type of CG system (Cooke and Sawa, 1998).

Solomon et al. (2002) also examined the views of fund managers in Korea. Their findings indicated that: “Korea’s financial institutions support initiatives to reform the country’s CG system. Further, they agree strongly that: investor relations need to be improved, chaebol’s accountability to shareholders should be improved, and shareholder activism should be encouraged. They also support the view that the chaebol’s activities were chiefly responsible for Korea succumbing to the East Asian crisis.”

Boniface (2002) presented how Nigeria has introduced CG reform and its nature, investigated the prospects for recent reforms to contribute to more responsible governance and development, and also examined the ownership structure of the CG sector. He concluded that the successes of CG reforms are linked to broader governance reforms of the Nigerian state and of the international economic order which sets the context in which states like Nigeria have to compete in the global economy.

A study conducted by Apreda (2001) in Argentina provided evidence for two statements. First, in Argentina, there has been a marked shift in ownership and control from large family-owned domestic companies to foreign groups and investment funds. Second, while coping with CG issues, Argentina has been following the common law countries tradition, fostering a capital-market-based financial system and changing its CG practice outright. The study also described the historical system of CG in Argentina and its process of reform in recent years.

Bryan and Carlos (2002) briefly analysed the historical CG model in Mexico, including governance structures, banking and financial systems, ownership and control patterns, industrial policy, and industrial relations. They also examined how and why these various aspects of CG have been changing with the processes of economic liberalisation currently under way. They concluded that state intervention in CG either directly through ownership or indirectly through regulation will continue to decrease. Although the role of family capital is diminishing due to an increased reliance on external capital, family control will remain firmly in place for the foreseeable future.

Fremond and Capaul (2002) stated that Chile’s CG system fits into the traditional insider model, with concentrated corporate ownership and pyramidal ownership structures. They concluded that Chile has complied reasonably well with the OECD principles for good CG. Seven pension funds and insurance companies held 30% of total assets at the end of 2001. Further, pension funds have influenced CG in Chile, urging better disclosure of information by companies, as well as lobbying for the protection of minority shareholder rights. As regards stakeholders, Fremond and Capaul (2003) stated that although the legal framework protecting stakeholders is fairly well developed, Chilean corporations still too often relate to their stakeholders in a confrontational manner, perpetrating the idea that entrepreneurs and stakeholders are rent-seeking individuals. Anecdotal evidence indicates that this approach often leads to corporate short-sightedness, which may jeopardise important opportunities for future economic development in Chile.

The King Report on CG (1994) was published in South Africa in order to formalise an ongoing process of CG reform. It provided an overview of the CG Code in South Africa. Further, it included a code of business ethics for companies and their stakeholders,





one of the most forward-looking codes of CG practice. Rossouw et al. (2002) reviewed CG in South Africa and made a distinction between broad and narrow conceptions of CG.

Demirag and Serter (2003) studied prevalent ownership concentration, structure and control in Turkish companies. The results of their study indicated that ownership of Turkish companies is highly concentrated: families are the dominant shareholders. The separation of ownership and control among Turkish companies is mainly achieved through pyramidal ownership structures and the presence of big business groups. In addition, cash flow and voting rights in Turkish companies are relatively more aligned compared to other family-ownership-dominated insider-system countries. Melsa and Mehmet (2003) also studied the CG system in Turkey, they provided an overview of the Turkish CG framework with two objectives, namely, to contribute to the CG literature by presenting the main aspects of the CG practice in Turkey and to set the Turkish CG reform agenda within the global debate, especially with respect to practice in developing countries. Their findings indicated that Turkey's investment environment is not "radiating" confidence to investors. The Capital Markets Board (CMB) of Turkey established a CG Code for Turkish joint stock companies in June 2003. The CMB indicated that it had established the CG principles based on the OECD Principles.

Carlos and Victor (2004) examined CG policy and company performance in Portugal. They used a unique database which allowed them to analyse the relationship between the level of compliance of the code of best practice issued by the Portuguese Securities Market Commission and the returns of the concerned companies. They found a positive relationship between recommendations and firm returns.

Loukas (2005) provided a comprehensive overview of CG development in Greece. His objectives were to enrich the debate in CG and to contribute to the increasing literature by presenting main aspects of the Greek CG framework and placing current CG developments and trends in Greece within the international debate. His findings indicated that the development of regulatory reforms was mostly an endogenous process influenced mainly by the speculative events in the Greek capital market during 1999.

From the above discussion it may be concluded that many developing countries have been paying increasing attention to the CG system and trying to establish CG codes. This is clear from reviewing the CG literature in these countries. A number of studies have concentrated on the board of directors' role while others have focused on other issues, such as ownership structure, CG model used in each country, and current disclosure practices.

A review of previous studies on Corporate Governance has provided many useful insights into the introduction of CG. Furthermore, it has reviewed empirical studies on CG in both developed and developing countries. Although the survey of the literature has shown that a large number of studies have examined the subject of CG in the context of developed and developing countries, there is no evidence that this subject has been examined in Libya. For that, more studies are needed to fill the gap in the literature relating to the CG system in Libya.

## RESEARCH METHODOLOGY

The objective of the study is to identify factors that are directly related to firm performance and the relationship between corporate governance structures and firm performance. Specifically, the study was focused on the examination of the significant different in the firm performance based on CEO duality characteristic and determination of the relationship between corporate governance structure and firm performance. The following hypotheses were tested:

H1: Board size has a negative influence on firm performance.

H2: Board composition has a positive influence on firm performance.

H3: CEO duality has a negative influence on firm performance.

H4: CEO Tenure has an influence on firm performance.

H5: Size of audit committee has a positive influence on firm performance.

Libyan manufacturing firms are mostly privately owned. Libya has been focusing increasingly on high value added manufacturing industries. In 2007, the manufacturing sector employed 18% of Libya's labour force, and contributed around 23% of GDP, making it the largest contributor to the economy for the third consecutive year (Department of Statistics, 2008). It is clear that the manufacturing sector is of a great importance to the Libyan economy. Any problems or malfunctioning in the sector would have severe social and economic consequences in Libya.

The paper focuses only on the Libyan Manufacturing Corporations (LMC) listed at Tripoli Security Exchange (TSE) at the end of 2006. According to the Directory of Libyan Corporations CD-ROM issued by the ASE, the total number of LMC listed at the end of 2006 is 87 firms. However, it's important to mention that a firm can be registered in Libya but operates in another country. For example, the number of LMC is 152 firms. However, not all of these firms operate in Libya. A number of them operate in the west bank that used to be part of Libya until 1989. Currently the west bank is part of the Palestinian authority. Furthermore, these firms are not listed at Tripoli stock exchange (TSE); rather they are listed at Palestine securities exchange. This is a political issue that is beyond the scope of the current research.

The paper focuses on LMC due to several reasons. They are connected to their high export potential and their significant role in the Libyan economy; the huge amount of money invested in these firms compared to other types of firms; the aggregate market capitalization of these firms which rose by 24.1% since 2004 to reach US\$ 5590.6 millions in 2005 (TSE, 2006); the availability of published data, the annual report, about the results of their operations; the possibility to reach these firms for the purpose of collecting data. The purposive sampling approach was used for the respondent's selection.

The major aim of the study was to explore the perceptions of various groups concerning corporate governance in Libya. Therefore, auditors, regulators, and directors of financial departments, were in the best position to provide the required data for the study. The reason for this decision was based on the facts that this group is the most knowledgeable in terms of corporate governance practices, policies, procedures, and implementation.

As for the current study, the lack of systematic research about corporate governance in the Libyan context necessitated the use of interviews. These interviews provided background information about corporate governance culture, practices, concepts, and difficulties prevailing in Libyan firms. In addition, they helped in clarifying the research problem.

The data was collected via online questionnaires, distributed by email during early 2014. Along with the filled out questionnaire, companies were asked to provide information about their total assets and profit for the period of years from 2000 to 2010. This period was chosen, as it would not contain data belonging to the Libyan civil war.

The hypotheses about the relation of various corporate governance variables and return of assets, representing company performance were tested.



## THE PAIR T-TESTS OF DIFFERENCE OF MEANS

### BETWEEN SECTOR ANALYSIS

The first variable that was taken into consideration is the main business of the studied companies, to see if there are sector differences. In order to do this, pair T-tests have been performed for each pair of different sectors.

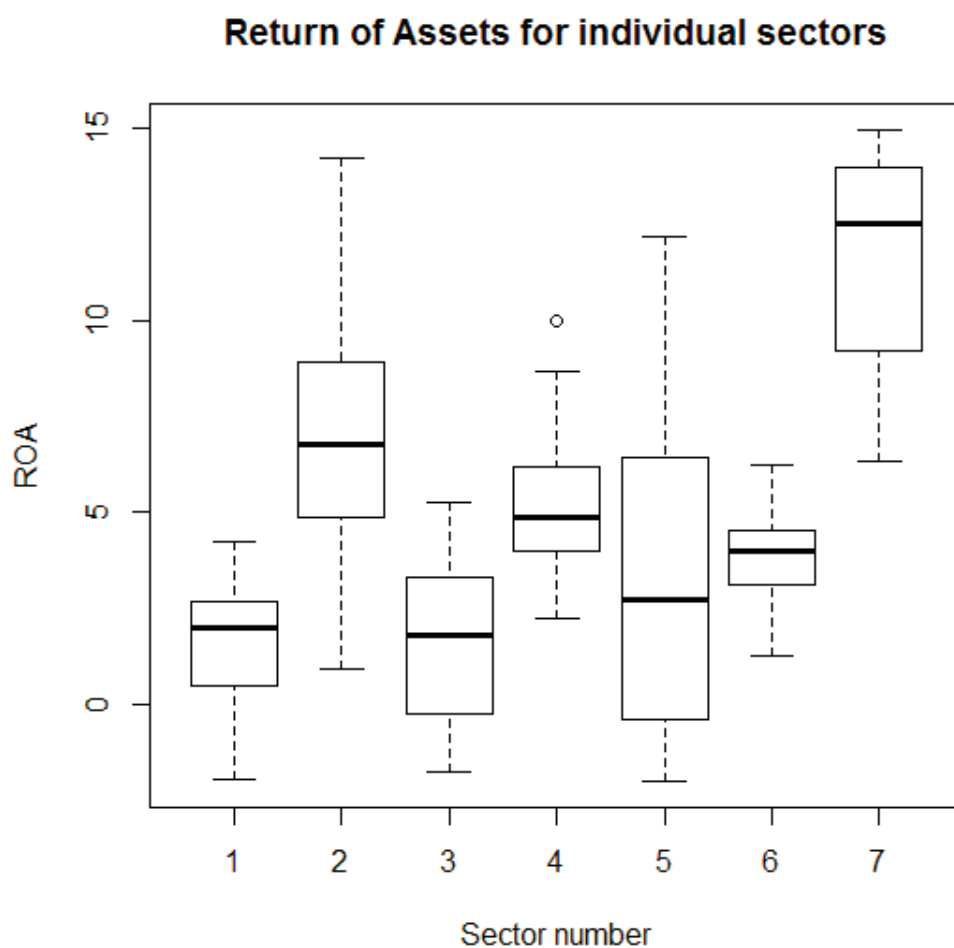
*Table 1: Legend for individual sectors, mean ROA for given sectors*

number	Sector	mean ROA
1	Banking	1.465162
2	Oil production	7.0437
3	Energy Services	1.565482
4	Telecommunications	5.206145
5	Insurance and investment	3.500148
6	Manufacturing	3.846333
7	Transportation	11.6359

According to the P values of individual T-tests, Banking (1) and Insurance and investment (3) both have sub average mean return of assets, as is to be expected when dealing with financial institutions. Oil production (2) presented an average return of assets slightly above average. Transportation sector (7) presented the absolutely highest return of assets, with relatively low variance compared to the Oil production sector.

*Table 2: P values of pairwise comparisons using t tests with pooled SD, adjustment method - Bonferroni*

	1	2	3	4	5	6
2	2.00E-16	-	-	-	-	-
3	1.000000	2.00E-16	-	-	-	-
4	5.1E-11	0.0038	7.1E-09	-	-	-
5	0.0018	5.4E-11	0.0132	0.0529	-	-
6	0.0006	1.5E-07	0.0041	0.5309	1.000000	-
7	2.00E-16	2.0E-06	2.0E-16	7.2E-11	2.0E-16	1.8E-14



*Figure 1:* **Boxplot of returns of assets of individual sectors.**

Sector notation is presented in table 1.

## COMPANY OWNERSHIP

The second studied variable was the ownership of the companies. In this case, the observations were divided into two groups based upon ownership.

*Table 3:* **T-test of difference of means for return of assets of companies based on the nature of their ownership**

t value	1.0854	df	103,296	p-value	0.2803
	State owned		Private		
Mean	4.445999		3.877797		

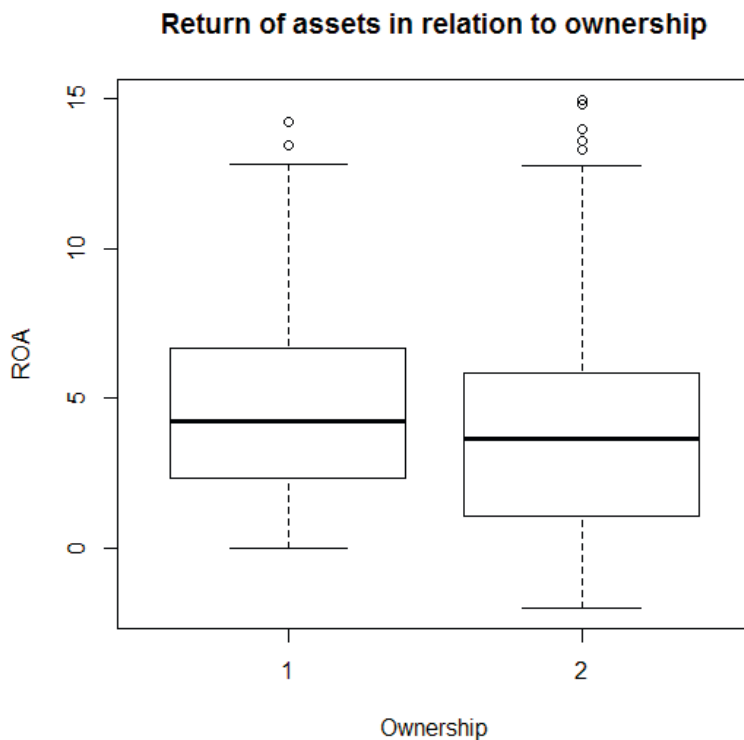
As can be seen, there is no statistically significant difference between private and state owned companies when it comes to the mean Return of assets.

### BOARD OF DIRECTORS SIZE

Next the analyses of companies with different board sizes were carried out in order to research a presence of the statistically significant difference in their return of assets.

*Table 4:* T-test of difference of means for return of assets of companies, sorted using the mean size of the board of directors

t value	-2.3969	df	281.175	p-value	0.01719
	Below average board size		Above average board size		
mean	4.804370		3.822468		



*Figure 2:* Boxplot of returns of assets of companies based on ownership.

1 - state owned, 2 - private company.

The results of the test show that there is a statistically significant difference between the mean return of assets between companies with above average board size and companies with below average board size. Comparing the means, it can be seen that if this is the case, the companies with larger boards achieve lower return of assets.



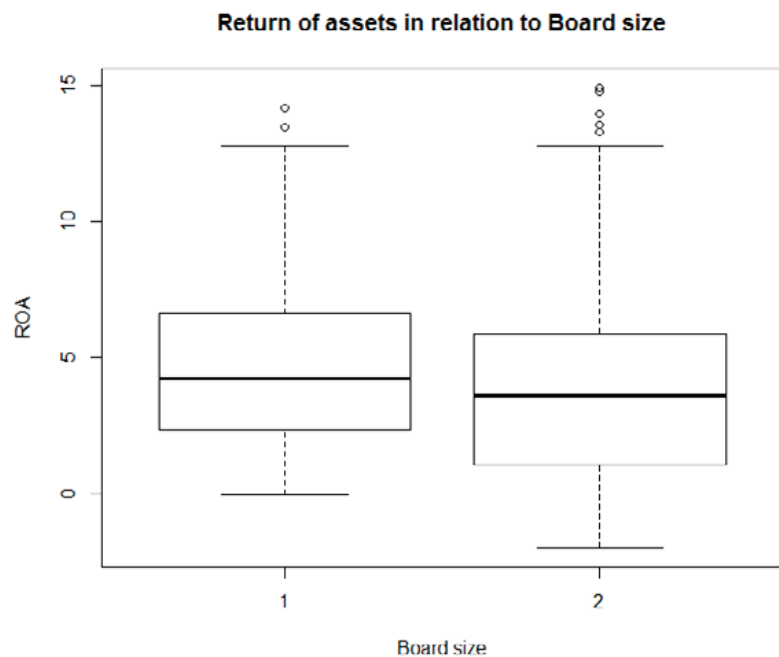


Figure 3: Boxplot of returns of assets of companies based on Board of directors size.

1 - below average size, 2 - above average size.

### EXTERNAL BOARD MEMBERS

The next considered variable is the composition of the board of directors, meaning the percentage of external directors on the board. The companies are sorted using the mean percentage of external directors on the board, and compare the means of these two groups.

Table 5: T-test of difference of means for return of assets of companies, sorted using the mean size of the percentage of external board members

t value	-5.106	df	272.049	p-value	6.194E-07
	Below average ext. members		Above average ext. members		
Mean	3.149923		5.203151		

The results of the test show a statistically significant between the mean return of assets of companies with an above and below average number of external board members. Comparing these means, it can be seen that the companies with higher percentage of external board members exhibited a higher mean return of assets, suggesting positive influence.



## CEO DUALITY

The dummy variable represents the existence of CEO duality in the given company.

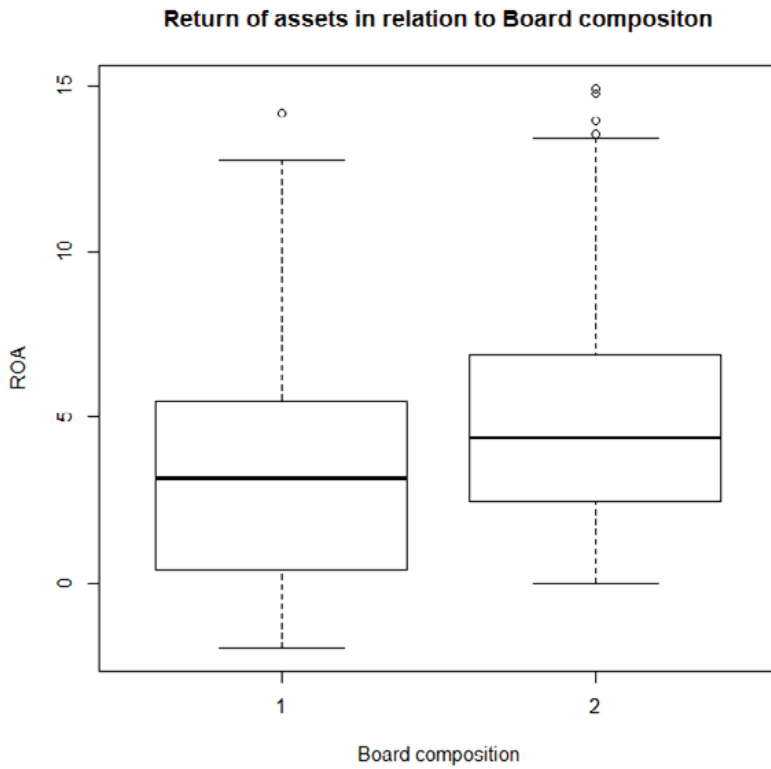


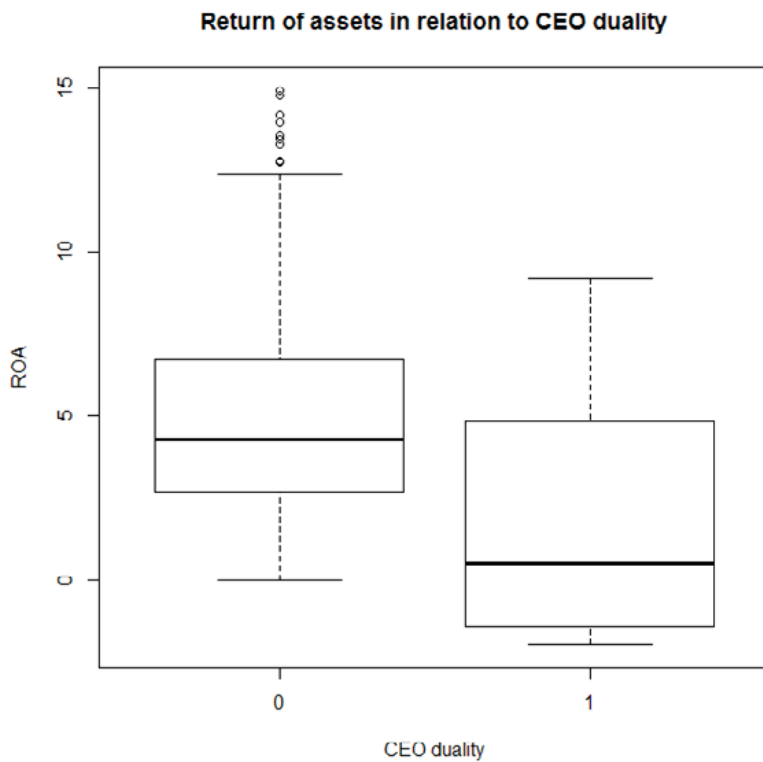
Figure 4: Boxplot of returns of assets of companies based on the number of external members serving on the board of directors.

1 - below average percentage of members, 2 - above average percentage of members.

Table 6: T-test of difference of means for return of assets of companies where CEO duality is and is not present

t value	7.1617	df	109.348	p-value	9.747E-11
	no CEO duality		with CEO duality		
Mean	5.087008		1.771628		

Again, the results of the test show that there is a statistically significant difference of mean return of assets between companies with and without CEO duality. Comparing the means it can be seen that CEO duality seems to have a negative impact on company performance.



*Figure 5:* **Boxplot of returns of assets of companies based on CEO duality.**

o - CEO duality not present, 1 - CEO duality present.

## LENGTH OF CEO TENURE

The next studied variable is the length of the CEO tenure within the companies. Again, the pair T-test shows whether companies with above average length of CEO tenure perform differently from companies with below average length of CEO tenure.

*Table 7:* **T-test of difference of means for return of assets of companies with different lengths of CEO tenure**

t value	1.4085	df	296.605	p-value	0.16
	Below average length		Above average length		
Mean	4.581386		4.007171		

The results of the test show no statistically significant difference, so it can be assumed that the length of CEO tenure has no impact on company performance.



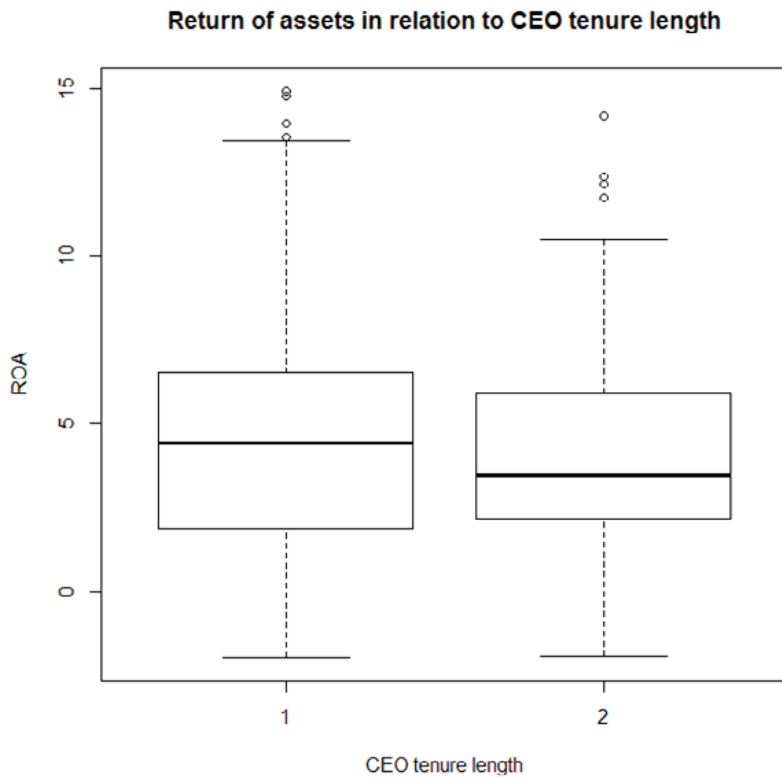


Figure 6: Boxplot of returns of assets of companies based on the length of CEO tenure of companies.

1 - below average length of CEO tenure, 2 - above average length of CEO tenure.

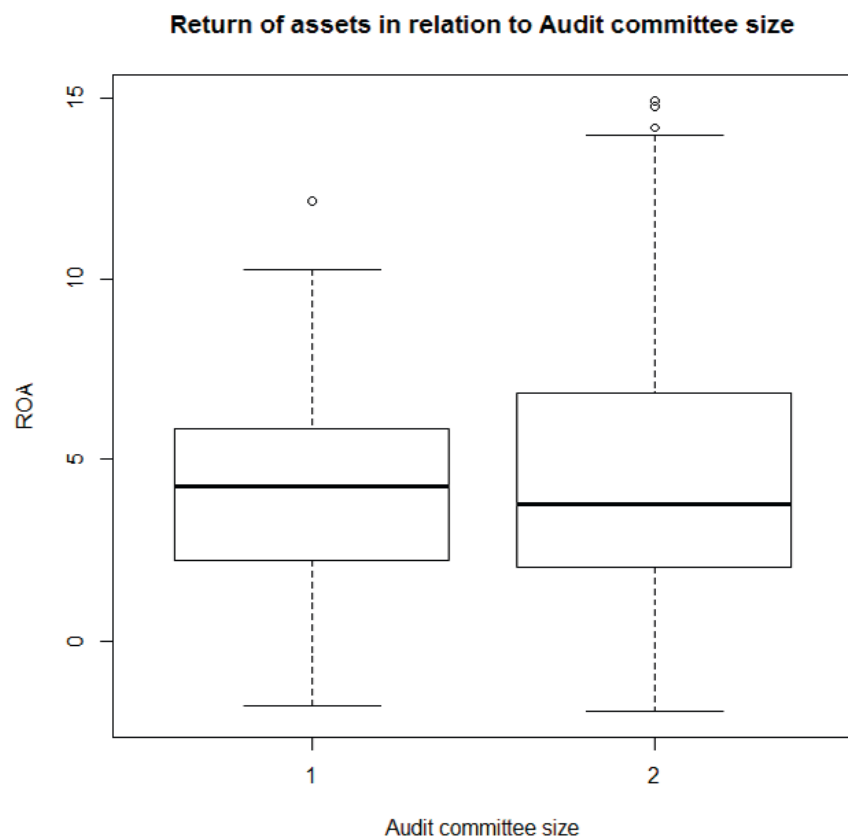
### AUDIT COMMITTEE SIZE

The final pair test is performed for the variable representing the size of the audit committee of the company. Here, companies were again sorted according to the mean size of the audit committee among all studied companies.

Table 8: T-test of difference of means for return of assets of companies with above and below average size of audit committee

t value	-1.2612	df	214.407	p-value	0.2086
	Below average Audit com. size		Above average Audit com. size		
Mean	3.953658		4.467602		

The results of the test show no statistically significant difference of means of returns of assets for companies depending on the audit committee size of the company.



*Figure 7:* Boxplot of returns of assets of companies based on the size of their audit committee.

1 - below average size of the audit committee, 2 - above average size of the audit committee.

## CONCLUSIONS

Having completed the series of t-tests, H<sub>1</sub> (Board size has a negative influence on firm performance), H<sub>2</sub> (Board composition has a positive influence on firm performance) and H<sub>3</sub> (CEO duality has a negative influence on firm performance) have been accepted. H<sub>4</sub> (CEO Tenure has an influence on firm performance) and H<sub>5</sub> (Size of audit committee has a positive influence on firm performance) were rejected.

In the article the theoretical background of corporate governance has been summarized, as well as the corporate governance in practice. The results show that there are significant differences between individual sectors in Libya, with financial sectors presenting lower returns of assets compared to the rest of the sectors, while oil producing and transportation sectors present above average returns. This is consistent with the general characteristics of these sectors in the world economy. Further, the pair t-tests showed that company ownership (state owned or private), length of CEO tenure and the size of the audit committee of the companies had no statistically significant effect on the return of assets of the companies.

However, board of director's size, percentage of external board members and the presence of CEO duality all presented a statistically significant effect. In the case of the board of director's size, companies with larger boards presented a lower return of assets in general than companies with smaller boards. Companies with higher percentage of external board members presented higher returns and companies where CEO duality was present presented significantly lower returns of assets compared to companies where CEO duality was not present.

To summarize, company performance in Libya, while varied between sectors, is not dependent on company ownership, where state owned companies presented the same performance as privately owned companies. As for the state of corporate governance, companies should limit the size do their boards of directors, increase the ratio of external board members and avoid the presence of CEO duality. As for the size of the audit committee and the length of CEO tenure, these factors have no influence on the company performance according to the results of presented study.



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# Household Indebtedness and Problems With Debt Service in the EU Countries<sup>1</sup>

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*Key words: household indebtedness, household over-indebtedness, European Union, cluster analysis*

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## HOUSEHOLD INDEBTEDNESS AND PROBLEMS WITH DEBT SERVICE IN THE EU COUNTRIES.<sup>2</sup>

In recent years in the European Union countries can be observed a significant increase in the level of household indebtedness. However, nowadays the problem of the debt should be viewed from a much wider perspective. Financial instability and problems of insolvency are determined not so much by the increase in the level of household debt in relation to their disposable income, as by the inability to service the bank debts and other liabilities. This is inability to repay the debt within the prescribed period, and not the level of household debt which contributes to deterioration of financial situation of households. The main aim of the paper is analysis of diversification of household indebtedness level and the problem with debt service in the European Union countries.

### INTRODUCTION

Nowadays, the phenomenon of households indebtedness gained a new dimension. It has become a permanent element of the modern consumer society. Households somewhat accustomed to living on credit and treat it as a common source of financing their needs (Lea, Webley and Walker 1995, Wałęga 2006 Raijas et al. 2010, Krasucka et al. 2011).

Wider and wider acceptance of hedonistic lifestyles and consumption results from two basic premises. Firstly, this lifestyle is determined by the dynamic development and growth in the popularity of the media and commercial advertisements, which create in society not only different desires and needs, but also force to seek additional, outside income sources of financing these needs and desires. (Watkins 2000).

Secondly, an important stimulator of new lifestyle has become a relatively high ease of obtaining credit as a source of financing new desires and needs. As a result of these conditions, increased social acceptance of using credit, which in turn resulted in a significant increase in the level of household debt (Watkins 2000, Kamleitner i Kirchler 2007, Kirchler et al. 2008, Kempson 2002).

Although the increase of the debt level measured as a household debt to disposable income ratio is characteristic for most developed economies (Bloxham and Kent 2009). Moreover in the theory of economics the debt is perceived as an instrument stabilizing the level of household consumption in time (Gumy 2007, Barba and Pivetti 2009, Świecka 2009), which is directly related to the life-cycle hypothesis (Modigliani 1954)

However, the dynamic increase in the volume and value of loans provided to households, together with financial mismanagement and a lack of financial awareness, due in large part to the scarcity of financial education, can contribute to over-indebtedness (Bywalec 2009 Świecka 2008, 2009). It is therefore necessary to distinguish two types of terms: indebtedness and over-indebtedness. (Szpringer 2008, Russell et al 2011, Vandone 2009, Gumy 2007, Disney et al. 2008).

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<sup>2</sup> The project was financed from the resources of The National Science Centre based on the decision number DEC-2012/05/N/HS4/00227





Overindebtedness is a relatively new term which, because of its complex and multidimensional nature has not yet been clearly interpreted (Vandone 2009, Świecka 2008, 2009, Davydoff et al., 2008, MORI 2005, Keese 2009, Kempson 2002, Schicks 2010, BEER 2007, Bricks and McKee 2010, Carpentier and van den Bosch 2008, Bryan et al. 2010, Russell et al. 2011, D'Alessio and Iezzi 2012, Bridges and Disney 2004, Kempson et al. 2004, Betti et al. 2007, Oxera 2004).

So far, there is no general agreement on the definition of over-indebtedness, how to measure this phenomenon and the boundary between indebtedness and over-indebtedness (Betti et al. 2007). As noted by Oxera (2004), most studies on over-indebtedness generally comes down to construction different types of measures, with frequent omission of an explicit definition of the concept of over-indebtedness .

Household can be regarded as being at risk of over-indebtedness if a significant part of their income is spent on debt service. Therefore, one of the most often measures of over-indebtedness is debt service ratio. For gaining information on whether the debt servicing costs are not excessive, it is necessary to determine the threshold of this indicator. In the literature it is taken at the level 20-50% (Rebiere 2007, Carpentier i Van den Bosch 2008, DeVaney 1994, DeVaney i Lytton 1995, Faruqui 2006, MORI 2003, Oxera 2004, D'Alessio i Iezzi 2012, Beer i Schürz 2007, Kempson 2002).

The main aim of the paper is analysis of diversification of household indebtedness level and the problem with debt service in the European Union countries.

## AIM OF THE PAPER, SOURCE MATERIALS AND METHODOLOGY

The main aim of the paper is analysis of diversification of household indebtedness level and the problem with debt service in the European Union countries. The aim is reached by classifying EU countries into subgroups according to the household debt level measured as a relation of households' income, debt structure and debt repayment problem in EU countries.

The data used in analysis come from European Credit Research Institute (ECRI) and EUROSTAT database - The European Union Statistics on Income and Living Conditions (EU-SILC) databases. The data about the level of European household indebtedness level in years 2005-2011 come from ECRI and the data about debt repayment problem in EU countries in 2005-2011 come from EUROSTAT.

To reach the main aim of the paper, multidimensional clustering methods where applied. This kind of methods enable to distinguish internally coherent segments in terms of chosen criteria (Pocza-Wajda 2010). In the analysis was used Ward method (Euclidean distance), which was applied to attribute the countries to the proper clusters according to the level and structure of household indebtedness and the debt repayment problems in year 2010. The aim of the method is to form homogeneous groups, minimizing the variance in clusters and maximizing the variance among them (Stanisz 2007)



## HOUSEHOLD INDEBTEDNESS LEVEL IN EU COUNTRIES

One of the basic measures of household indebtedness is a burden of debt repayment. The ratio of debt to income is widely used in the comparative analysis of the level of household sector indebtedness between countries. The values and dynamics of this ratio for particular EU countries between 2005 and 2011 are presented in table 1.

In the years 2005-2011 in the EU-27 total credit debt of the household sector represents more than 90% of the households' disposable income. Since 2010, the debt level equals the level of disposable income of households.

A much lower level of debt relative to income was characterized for households from new member states. At the beginning of the analyzed period, the debt in these countries constituted only a quarter of households' disposable incomes. This group of countries, however, have a relatively high growth rate of debt to income ratio. In 2005-2011 the rate increased on average by 15%. At the same time in the EU-15 growth rate equals only 2.1%. Since 2009, household credit debt in the New Member States (NMS) already constituted about half of their disposable income. Despite the high dynamics, the level of indicator in NMS constituted only a half of the level of „Old Member States”.

In the whole EU, the debt-to-income ratio has increased significantly. The only country with a negative growth rate were Germany, where in 2005-2011 the average rate decreased by 2%. Relatively stable rate remained in Ireland and the UK.

In 2005 in as many as six countries: Cyprus, Denmark, Spain, Ireland, the Netherlands, Sweden and UK, the households debt clearly exceeded households disposable income. Since 2006, these countries were joined by Portugal. The most indebted countries in 2005-2011 were Denmark and the Netherlands. In Denmark, the debt exceeded approximately 2,5 times (233% -288%) and the Netherlands two times (165% -200%) households' disposable income.



Table 1: Household credit debt as a relations to their disposable income in 2005-2011

Countries	2005	2006	2007	2008	2009	2010	2011	Change*
EU 27	90,7	96,0	97,0	93,0	98,5	100,0	100,1	2,3
EU 15	94,8	100,3	101,1	97,0	102,0	103,6	102,8	2,1
NMS**	25,0	31,4	39,0	41,3	49,5	51,7	49,4	15,1
AT	71,3	70,8	70,4	71,8	72,7	75,3	74,9	2,9
BE	73,7	77,6	80,9	82,8	86,1	90,7	90,1	3,8
BG	28,7	34,1	46,1	na	na	na	na	34,4
CY	127,6	134,0	141,1	151,6	163,8	170,6	na	6,0
CZ	24,9	30,0	37,8	42,9	47,1	50,3	52,1	14,8
DE	92,8	90,8	88,0	85,2	85,8	83,9	82,2	-2,0
DK	232,0	251,8	274,7	280,2	288,1	277,1	264,9	3,4
EE	54,0	75,3	83,7	85,0	89,2	86,8	80,1	11,8
EL	48,6	56,9	61,2	68,9	68,8	71,6	68,9	8,1
ES	105,1	118,6	125,2	123,1	121,0	124,6	119,5	4,5
FI	78,3	84,7	88,6	90,1	92,2	94,4	97,3	4,9
FR	62,0	66,0	69,4	71,0	72,6	75,5	77,9	4,5
HU	28,7	34,1	40,8	51,5	52,5	57,3	na	15,4
IE	145,1	157,6	161,4	143,9	149,8	145,9	121,8	-0,4
IT	42,4	45,4	48,0	48,0	51,7	60,0	60,5	6,6
LT	19,9	29,3	41,5	42,8	42,5	41,5	na	22,8
LU	na	108,8	122,0	121,8	128,3	na	na	5,6
LV	43,1	61,7	70,0	61,9	70,2	69,7	60,8	12,1
MT	na	na	na	na	na	na	na	na
NL	165,9	176,3	178,6	187,3	194,7	200,1	200,9	3,8
PL	20,9	26,5	34,2	45,7	48,0	52,1	54,5	18,1
PT	91,1	102,0	107,5	107,3	111,0	110,6	110,8	3,8
RO	11,9	18,9	28,7	30,0	32,2	33,6	na	28,6
SE	115,2	122,9	127,4	130,3	137,5	144,0	144,8	4,6
SI	22,8	27,3	31,8	33,8	36,6	39,8	40,0	10,9
SK	15,9	21,3	25,0	31,7	34,3	36,8	39,0	18,3
UK	148,4	156,2	165,0	164,1	160,4	153,8	148,2	0,4

Source: Own calculation based on data from ECRI

\*average annual change, \*\* New Member States

During the analyzed period households debt to income ratio grew the fastest in Romania (28,6%), Lithuania (22,8%), Slovakia (18,3%), Poland (18,1%) and Hungary (15,1%).

In Romanian household credit debt to income ratio in 2010 was almost three times higher than in 2005, increasing from 11,9% to 33,9%. It was almost 12 times faster growth than in the EU-27 and 2-times faster than in the NMS. Despite this high growth rate, the level of this indicator was in Romanian households the lowest in the whole EU. Similar level of debt can be observed in Slovakia and Slovenia, where between 2005-2011 debt does not exceed 40% of household disposable income.

Approximately 2,5-times increased debt repayment burden compared to 2005 in Poland and Slovakia. In Poland debt in 2005 constituted only 21% of households' income and in 2011 - more than half (54%). In Slovakia, the rate increased from 16% in 2005 to 39% in 2011.

## THE SCALE OF THE HOUSEHOLDS DEBT REPAYMENT PROBLEM

The results of analysis of the household indebtedness level shown above, outline the scale of this phenomenon. However on this basis it is difficult to assess the impact of debt level growth on the economic and financial situation of households in the EU countries, which is largely shaped by households ability to service its obligations. Inability to repay the debt within the prescribed period, and not the level of household debt in fact contributes to the deterioration of the financial situation of households.

The scale of the problem with arrears of current liabilities reflect the data in the table 2. It shows the percentage of households in the EU countries, which have arrears in payment at least one of the following item: mortgage or rent fee, utility bills, repayment of loan installments other than the mortgage.

In years 2005-2011 in the EU-27 about one in ten households reported arrears in payment of at least one commitment. The percentage was stable throughout the analysed period, the average annual rate of change was only 0,4%

Slightly more important role this problem played in the analyzed period in the new Member States. In 2007, 15% of households in these countries reported a problem with arrears. In subsequent years, this number increased on average by more than 6%. In 2010-2011, almost every fifth household in the New Member States had a problem with the repayment of at least one commitment.

The data from Table 2 shows that the biggest problems with arrears had households in Greece, Bulgaria, Romania, Cyprus, Latvia and Hungary. These countries are characterized by a relatively high level of inflation, while low disposable income per capita, which may result in problems with debt repayment. Furthermore, in recent years in Greece and Latvia it can be observed, high unemployment rate, which in Greece increased in 2010-2011 from 12,6% to 17,7%. In Latvia, was observed the reverse trend and the unemployment rate decreased from 19,5% in 2010 to 16,2% 2011. Despite a significant decrease, this rate is still significantly higher than the average in the EU-27 (EUROSTAT DATABASE).



*Table 2:* Percentage of households in the EU countries, which have arrears in payment at least one of the following item: mortgage or rent fee, utility bills, repayment of loan installments other than the mortgage in the EU countries in years 2005-2011

	2005	2006	2007	2008	2009	2010	2011	Mean <sup>4</sup> in years 2005-2011	average annual rate of change in 2005-2011
UE 27	11,2	10,6	9,9	10,3	11,6	11,7	11,5	11,0	0,4
UE15	9,1	9,0	8,5	8,9	9,6	9,6	9,5	9,2	0,7
NMS			15,0	15,6	18,4	19,8	19,1	17,5	6,2
BE	7,5	6,9	6,1	6,9	7,3	7,8	7,8	7,2	1,2
BG	22,1	22,1	31,0	35,5	34,8	33,8	30,9	29,5	5,7
CZ	11,0	8,4	5,6	4,4	5,8	6,0	6,1	6,5	-9,4
DK	6,7	5,3	4,4	3,9	5,8	6,2	6,7	5,5	2,1
DE	5,5	6,9	5,8	5,6	5,6	4,9	5,2	5,6	-0,9
EE	11,5	7,0	5,2	8,6	12,1	13,3	13,8	9,7	-1,0
IE	9,4	8,3	8,4	10,8	14,0	16,7	19,9	11,9	11,1
EL	33,1	29,9	26,4	24,4	28,7	30,9	31,9	29,2	0,7
ES	7,2	7,0	7,6	8,2	11,0	11,7	8,7	8,6	1,6
FR	10,7	9,7	9,8	9,6	11,2	10,8	9,9	10,2	-3,5
IT	12,7	12,9	12,5	15,8	12,7	12,8	14,1	13,3	1,4
CY	21,8	22,0	23,0	14,1	23,3	28,0	28,4	22,5	4,5
LV	24,3	14,8	10,3	14,1	21,9	25,7	26,2	18,6	1,3
LT	21,5	14,5	9,4	8,1	9,9	12,2	13,2	12,1	-7,8
LU	4,0	2,4	2,7	2,4	4,0	3,3	3,9	3,2	-2,6
HU	17,6	16,6	19,1	16,5	22,2	24,3	24,7	19,9	5,8
MT	9,0	7,5	7,9	8,3	7,8	7,3	9,1	8,1	0,2
NL	5,7	4,9	4,3	4,1	4,1	4,9	4,9	4,7	-2,5
AT	3,0	3,4	3,9	7,3	7,4	7,2	7,4	5,3	12,7
PL	26,7	22,4	18,2	11,3	14,1	15,3	14,2	16,8	-10,0
PT	7,1	6,5	7,0	6,4	8,7	8,6	10,2	7,7	3,3
RO			10,1	25,4	27,1	29,8	30,2	22,9	31,5
SI	15,4	13,8	14,2	16,1	18,4	19,5	19,0	16,5	3,6
SK	11,5	10,0	7,6	5,3	13,4	12,1	8,5	9,4	-4,9
FI	11,4	9,7	9,2	10,4	10,6	10,3	11,0	10,3	-1,4
SE	9,2	8,0	5,8	6,2	7,0	6,4	5,9	6,8	-7,0
UK	9,4	8,7	8,5	7,4		9,6	8,9	8,7	-7,6

Source: Own calculations based on the EU-SILC database

<sup>4</sup> The geometric mean in 2005-2011

In Greece and Bulgaria in the entire analyzed period, almost every third household (29%) were unable pay commitments on time. However the percentage of households having a problem with arrears grew up the fastest in Romania. In 2007, only one in

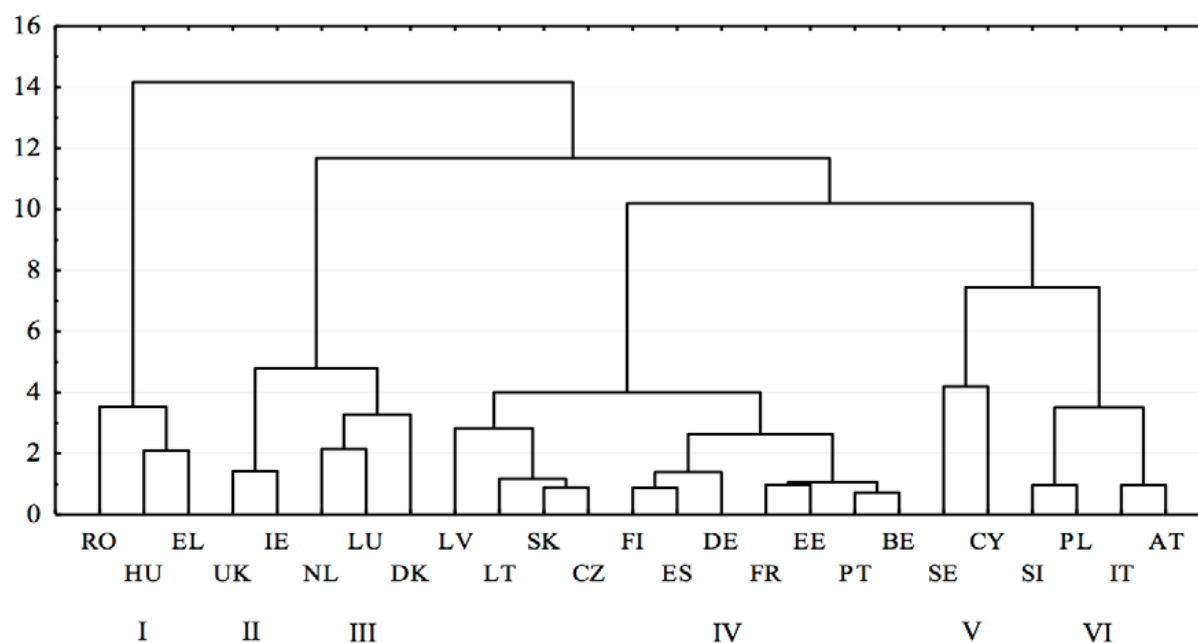
ten Romanian household was struggling with this problem. The average annual rate of change in 2007-2011 was 32%. In 2008, already every fourth household, and in 2011 almost one third of the households had a problem with arrears.

In 2005-2011 in Cyprus, Latvia and Hungary on average about every fifth household had problems with servicing debt on time.

## THE CLASSIFICATION OF EU COUNTRIES ACCORDING TO THE HOUSEHOLD DEBT LEVEL AND STRUCTURE AND DEBT REPAYMENT PROBLEM

Based on the data coming from ECRI on the level and structure of households indebtedness in the EU countries and data from the EU-SILC on arrears in payment of current liabilities, EU countries were classified according to the level and structure of debt and debt servicing problems. First, these data were standardized and then 6 clusters of countries were distinguished. The number of clusters was determined by analyzing the agglomeration process chart and merits.

*Picture 1:* Classification of EU countries according to the level and structure of household debt and debt service problems, 2010 r.<sup>a,b</sup>



<sup>a</sup> Malta and Bulgaria were excluded from the analysis due to the lack of data

<sup>b</sup> Missing data for 2010 for Luxembourg was supplemented by the data from Eurostat

Source: Own calculations based on ECRI and Eurostat

The first group is represented by households from Romania, Hungary and Greece - countries with very low rate of credit debt. On average, only about half of the disposable income was burdened with credit debt repayment. Very important role in this group of countries play consumer credit.

It represent about a quarter of disposable income of households and almost half in total credit debt structure. At the same time, these countries are characterized by the lowest of all groups share of housing debt in the total credit debt structure (less than 50%). Other loans in total debt structure occupied only 5%. Despite such low debt rate, Romanian, Hungarian and Greek households declared the biggest problems with debt service. Moreover, every fourth household (28%) in these countries had arrears of at least one commitment.

In the second group UK and Ireland were classified. These are countries where households are quite heavily indebted, and the credit debt exceed the disposable incomes by one and a half. The debt structure was dominated by housing loans, which accounted for almost 80% of the total credit debt. Despite the relatively high rate of debt, the percentage of households having a problem with servicing debt on time fluctuated within the EU-27 average.

The third group was formed by three countries (the Netherlands, Luxembourg and Denmark) with the highest rate of credit debt. Average credit debt in this group was twice as big as the disposable income of households. The debt structure was dominated by home loans, which account for nearly 90% of the total credit debt. Despite this high level of indebtedness Dutch, Luxembourg and Danish households do not have major problems with debt. Less than 5% of households declared problems with arrears of at least one commitment. This is the lowest percentage among all distinguished groups.

The fourth and largest group consists of eleven countries :Lithuania, Latvia, Slovakia, Czech Republic, Finland, Estonia, Germany, Portugal, Belgium, Estonia and France. This group of countries is characterized by similar to the average in the EU-27 levels of the analyzed indicators

Another group was created by Cyprus and Sweden. Households in these countries are characterized by a high rate of debt - the household disposable income were exceeded 1,5 times by credit debt. Although the debt structure is dominated by housing loans, their interest is much lower than in other separate groups. In this group an important role plays other loans, which, in the structure of debt accounted for as much as 30%.

In the last group four countries were classified: Slovenia, Poland, Italy and Austria. This group is characterized by a very low burden of income by consumer credit. Only 1/10 of disposable income in this group of countries is burdened with the payment of consumer loans. Relatively low compared to other countries is also the burden of income by housing loans, which on average in the group was 60%. The burden of income by repayment of other loans is at a level similar to the EU-27 and was less than 10%. The debt structure in this group of countries, and the percentage of households having problem with debt repayment are similar to average levels in the EU-27.

**Table 3: Classification of EU countries <sup>a,b</sup> according to the level and structure of household debt and debt service problems, 2010 – average percentages for distinguished groups of countries**

Group number		I	II	III	IV	V	VI	
Countries		RO, HU, EL	UK, IE	NL, LU, DK	LV, LT, SK, CZ, FI, ES, DE, FR, EE, PT, BE	SE, CY	SI, PL, IT, AT	UE27
The share of credit debt in disposable income	Total credit debt	54,2	149,9	203,9	78,6	157,3	56,8	100,0
	Consumer credit	22,9	21,6	10,3	9,5	17,2	12,9	13,2
	Housing loans	29,1	119,5	178,3	59,9	92,5	31,5	74,6
	Other credits	2,2	8,7	15,3	9,2	47,6	12,4	12,2
The structure of credit debt	Consumer credit	46,1	14,4	5,1	12,9	10,5	23,9	13,2
	Housing loans	49,0	79,6	87,2	75,6	59,3	55,1	74,6
	Other credits	4,9	5,9	7,8	11,5	30,1	21,0	12,2
Households with arrears		28,3	13,2	4,8	11,2	17,2	13,7	11,7

<sup>a</sup> Malta and Bulgaria were excluded from the analysis due to the lack of data

<sup>b</sup> Missing data for 2010 for Luxembourg was supplemented by the data from Eurostat

Source: Own calculations based on ECRI and Eurostat

To sum up, the two most characteristic clusters form countries from the first and third group. In the first group were classified Romania, Hungary and Greece. These countries are characterized by a very low rate of debt, with a relatively large share of consumer debt and the greatest of all groups problems with debt repayment, which declares almost a quarter of households. It should be noted that the negative situation of Romanian, Hungarian and Greek households may result from the relatively low level of GDP per capita and disposable income per capita.

The third distinguished group that formed the Netherlands, Luxembourg and Denmark - is a group of rich countries with a developed economy and financial services market, a high level of GDP per capita and disposable income and per capita and a very low unemployment rate. The financial services market in these countries has a long tradition, which translates into financial awareness of society. These countries are characterized by the highest rate of debt with a domination of housing loans, while the lowest percentage of households declaring debt problems.





## CONCLUSIONS

Lack of clear definition of households over-indebtedness is reflected in a number of different measures of this phenomenon. One of the most frequently used indicator is the household debt to disposable income ratio. The study shows that in this respect the EU's most indebted country was Denmark, Netherlands and Luxembourg while the least indebted - Romania, Hungary and Greece. However, according to the conducted analyzes, the high level of debt to income ratio not necessarily mean the financial problems of the household. The analysis shows that smallest problems with debt repayment occurred in countries where households are highly indebted. This may result from a long tradition and a high level of credit market development in these countries, greater financial awareness of society and relatively high income, which cover not only current needs, but is also sufficient to service household debt. As the opposite there are households in countries with a low level of indebtedness. Although high growth rate of this phenomenon in these countries associated with relatively lower disposable incomes can contribute to serious problems with the repayment of current liabilities.



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# Comparative Analysis of the Manufacturing Industry of the Bosnia and Herzegovina and Selected See Countries

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## *ABSTRACT*

This analysis examines some features of Bosnia and Herzegovina's manufacturing industries and compares it with the situation in selected SEE countries in the period from 2007 to 2012. This paper analyses manufacturing industry in general, its primary sector and its level of technological intensity. Since results indicate that the structure of Bosnia and Herzegovina's manufacturing is falling behind the compared countries' manufacturing, the general conclusion suggests that Bosnia and Herzegovina's manufacturing is losing its competitiveness. Lower competitiveness results from an unfavorable technological structure, in so far that the industries characterized by a low level of technological intensity are gaining strength and dominate the manufacturing sector.

*Key words: manufacturing, competitiveness, technological intensity, revealed comparative advantage*

## INTRODUCTION

One of the most powerful propositions of classical trade theory is that the pattern of international trade is determined by comparative advantage. That is, a country with comparative advantage in given commodity exports, and the other with comparative disadvantage imports. One of the first attempts to measure comparative advantage was Balassa's (1965) RCA index (BRCA) using variables generated from post-trade equilibria, which is so far the most widely used index in analyses of comparative advantage. The most traditional and common ways are: (a) to simply examine whether a given country has a comparative advantage in a given sector by comparing the calculated value and the comparative advantage neutral point (dichotomous measure)<sup>1</sup>; (b) make a comparison across sectors within a given country or across countries with respect to given sectors by using rankings in order of calculated index values (ordinal measure); and (c) to examine how much of comparative advantage or disadvantage a given country gained during the period of interest by directly comparing calculated index values (cardinal measure). Although used by many researchers, the BRCA has been under criticism for its alleged incomparability and inconsistency. The BRCA has been criticized for not achieving comparability especially in terms of the second and third aims (e.g. Bowen, 1983, Cai and Leung, 2008, De Benedictis and Tamberi, 2001, De Benedictis and Tamberi, 2004). However, it is important to emphasize that there is no perfect RCA index: each index has its advantages and disadvantages depending on circumstances. Furthermore, as Balassa (1965, 1977), Ballance et al. (1987) and Dowling and Cheang (2000) point out, the major disadvantage of those indices is that trade data and production data are usually collected at a different point in time, using different classifications and definitions<sup>2</sup>, which can cause unreliable inferences in analyses. Concerning the limited information we have, the trade-only indices provide a relatively more accurate indication of comparative advantage than those of trade-cum-production in empirical tests (Dowling and Cheang, 2000).

Analyzed South East European (SEE) countries are facing significant problems in economic development of transition economies. Cross-border flows of goods, services, finance, people, data, and communication will expand in all plausible scenarios during the years ahead. What is changing dramatically is the *mix* of these flows. Trading partners were primarily neighboring or nearby countries. Today, this trend is being upended. New regional hubs are coalescing around the world to facilitate flows of goods, services, and money in an expanding global network. Governments (which are responsible for shaping trade policies) and companies should take close note of the shifting landscape and react quickly in order to adapt. Governments need new strategies and stable public finances to deal with such problems. Besides these, governmental competitiveness drivers can include trade, infrastructure development, labor and workforce productivity, research and innovation, intellectual property protection and environmental and other regulations.

The concept of manufacturing competitiveness has emerged as a new paradigm in economic development in the last few years and it has become of increasing concern to small economies that apply for EU membership. Ezeala-Harrison (1999) believes that "international competitiveness is defined as the relative ability of a country to produce and sell products of standard or better quality at lower prices" (p. 57). The parameters determining the state of international competitiveness of a certain country are divided into micro and macro levels. Micro-parameters are the ones that determine company level competitiveness, while macro-parameters determine state level competitiveness. Krugman (1994) deems that a country increases its competitiveness if it increases national productivity, i.e. if its companies have higher productivity. Thus, he proves that the competitiveness of a country does not equate to the competitiveness of its companies (p. 31).

1 For example, the comparative advantage neutral point of BRCA is unity. When a given country shows BRCA =1,5 in a given sector, the country is considered to have a comparative advantage in that sector.

2 For example, trade data are collected by Standard International Trade Classification (SITC) or Harmonized System (HS), while production data by International Standard Industrial Classification (ISIC), Central Product Classification (CPC), etc. The concordance between the two different classifications demands a very laborious exercise.



This paper assesses developments related to the external competitiveness of selected South East Europe (SEE) countries (Bosnia and Herzegovina (B&H), Croatia, Slovenia and Serbia) over the period 2007-2012. We observed this period (2007-2012) because the economic turmoil started to affect the 'real' economy, with a negative impact on the volume of exports and imports of goods and services. Although exports and imports of goods and services of many of the EU Member States recovered in 2011, the volumes of financial flows grew back only slowly or in some cases fell still further. The economic and financial crisis has had a substantial impact on the economy of analyzed SEE countries. In recent years there has been a substantial increase in indebtedness recorded in the selected SEE countries (Bosnia and Herzegovina, Serbia, Croatia and partly Slovenia). One of the reasons is the lack of structural reforms which extends in 2012.

We also consider different measures of competitiveness which are regarded as standard indicators of manufacturing industries export performance. The level of technological intensity as the most important aspect of exports is discussed. Similar to other emerging economies around the world, the analyzed countries have recorded decreasing export market shares at the expense of advanced economies, particularly before the year 2008. Bosnia and Herzegovina's market share remained constant between 2007 and 2012, which still does not imply that the country has performed better than some other analyzed economies. Croatia and Serbia have roughly similar increases in world export market shares over the analyzed period (2007-2012), while the Slovenian market share stays at the same level. All of the analyzed countries have lagged behind the EU-27. Only Slovenia reported export growth close to that of the EU-27 countries. From the onset of the 2008 crisis, developments in world export market shares have been rather heterogeneous between all the countries, pointing to competitiveness problems in some of them. The export shares of B&H have decreased continuously throughout the above period, whereas the impact of the crisis has been particularly severe.

The SEE countries which we analyzed need to stimulate and enhance entrepreneurial activities to improve their competitiveness and economic development. The level of competitiveness in these SEE countries is not satisfactory, raising the question of how to increase this level through different measures (policy mix). In the analyzed countries these are measures to increase exports (strengthening the competitiveness of export companies) and various measures within the framework of fiscal policy. Fiscal policy is one of the measures which can improve the competitiveness of individual industries in countries. One of the ways for increasing competitiveness through fiscal policy measures is encouraging foreign companies to invest in domestic production. This requires the provision of all prerequisites combined with a simplified bureaucratic procedure. The analyzed SEE countries, save for Slovenia, do not fulfill these prerequisites. This particularly refers to instruments such as transfer, tax rates, tax reliefs and the issue of fiscal consolidation (within the framework of public debt and deficit management). In addition to these, tax incentives are also very important. They are relatively easy to administer through the existing tax systems of these SEE countries. Tax incentives and R&D subsidies are used to carry out R&D projects by narrowing the gap between private and social returns. Their role is to promote R&D investment by both domestic and foreign companies in these SEE economies.

## APPROACH

The aim of this paper is to systemically compare attempts at measuring comparative advantage of B&H and the selected SEE countries thorough the RCA index and the relationship between them. To do that, we apply the RCA index in real cases by taking an example of B&H and SEE countries, namely, Croatia, Slovenia and Serbia as very important B&H trade partners. Then we calculate the RCA indices for B&H and the selected countries, using ITC (International Trade Centre) trade data from 2007 to 2012 based on ISIC Rev 3, two-digit level of aggregation. We also made a cross-country analysis of manufacturing industries (% of export) in order to make a more appropriate comparison. Data describing traded products of manufacturing industries products was selected on the basis of their technological intensity. To identify technological intensity two approaches are used:

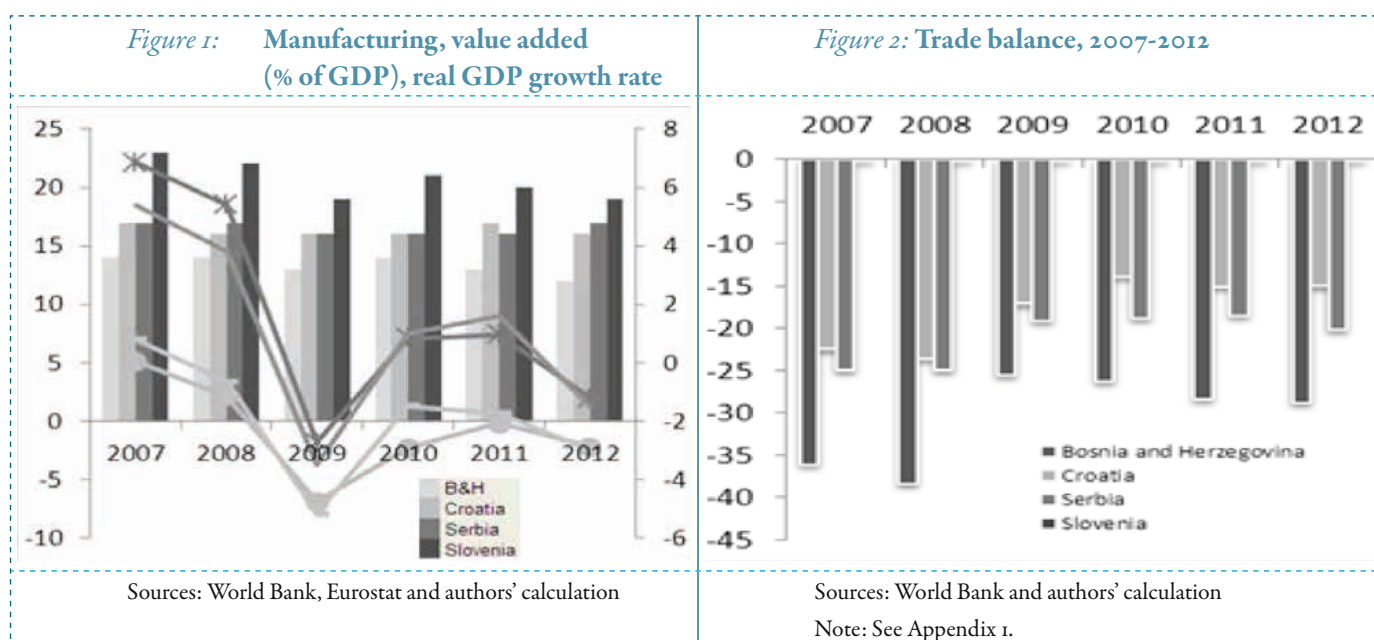




sectoral and product approach. Furthermore, we also consider different measures of competitiveness which are regarded as standard indicators of manufacturing industries export performance. The level of technological intensity as the most important aspect of exports is discussed.

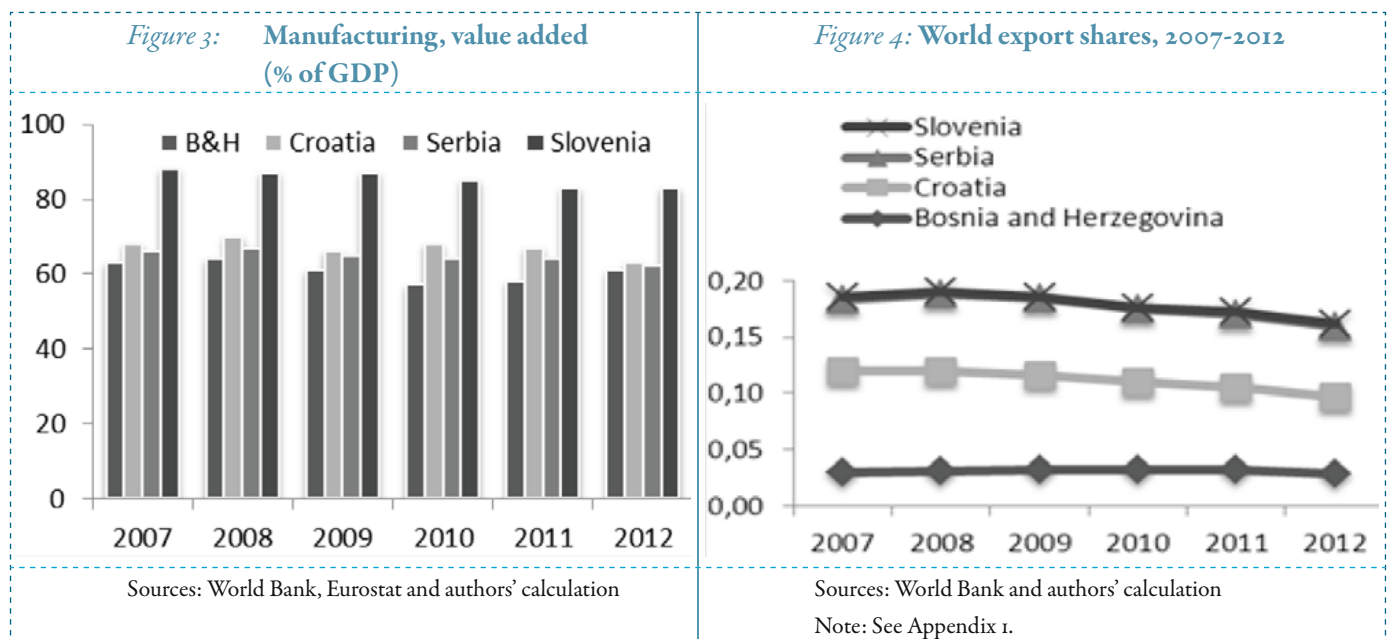
## TRADE AND MACROECONOMIC TRENDS

In this section we elaborate different components of the countries' trade and some basic macroeconomic indicators over the observed period 2007-2012. Successful export performance measured in terms of gains in export market shares is a long-term sign of a country's competitiveness and sustainable GDP growth.



Slovenia experienced the biggest decrease in real GDP growth rate. In 2007, Slovenia has a real GDP growth rate of 7.0 and in 2009 it is 7.9. In 2012, Slovenian real GDP growth rate has a negative value at -2.5 level. With the exception of 2011, the year-on-year real GDP rate was negative after 2009 for B&H, Serbia and Croatia. The EU-27 has a similar result as the other analyzed countries (European Commission 2010, 2011). In 2011, all of the countries have a positive value of real GDP rate, while only Croatia has a negative growth rate (0.2%). In the last year of the observed period, 2012, all countries have a negative real growth rate (Figure 1). Considerable current account deficits as indicators of their strong dependency on imports are the basic common characteristic among these countries (Figure 2). All of the analyzed countries increased their export and trade openness over the observed period. B&H has constant world export shares at 0.03%, while Serbia (from 0.07 to 0.06%) and Croatia (from 0.09 to 0.07%) record a decrease in shares for the period 2007-2012 (Figure 4). At the same time there has been a downward trend in the share of GVA manufacturing industry as a % of GDP (Figure 3).





In order to obtain a more coherent picture, the above analysis has been extended by looking at the manufacturing, value added as a % of GDP.<sup>3</sup> All of the countries have a decreasing value at this indicator, while B&H has the smallest contribution of manufacturing as value added (% of GDP).

## MANUFACTURING INDUSTRY COMPETITIVENESS

According to the Global Competitiveness Report 2014, competitiveness has been defined as “the set of institutions, policies, and factors that determine the level of productivity of a country” (WEF, 2014, p. 4). Additional analysis of some competitiveness indicators may lead to the creation of preconditions for proposals as well as creation of efficient policy. For the purposes of this paper, manufacturing industries (% of exports) have been analyzed in terms of the factors of production used and classified into four groups:

1. *The first group*, merchandise exports of resource intensive products, is characterized by a high content of natural resources, relatively simple production technology, and limited productivity growth potential and includes the following products: food, beverages, raw materials, mineral fuels, animal and vegetable oils and fats, leather, veneers and other manufactured wood, and ferrous and non-ferrous metals.

<sup>3</sup> According to the WB data, manufacturing refers to industries belonging to ISIC divisions 15-37. Value added is the net output of a sector after adding up all outputs and subtracting intermediate inputs. It is calculated without making deductions for depreciation of fabricated assets or depletion and degradation of natural resources. The origin of value added is determined by the International Standard Industrial Classification (ISIC), Revision 3. Note: For Value Added for the selected SEE countries, gross value added at factor cost is used as the denominator.

2. *The second export group* is labor-intensive, with low technology intensity: clothing, textile products, footwear, furniture, glass products, metal products, iron and steel, transport equipment except motor vehicles, sanitary ware and parts.
3. *The third group* of products with medium technology intensity includes machinery and equipment, electrical machinery and apparatus, cars, plastic products, tires.
4. Products classified in *the fourth group* are products with high technology intensity: medical and pharmaceutical products, chemical products, computer equipment, telecommunications equipment, equipment for medical and scientific purposes and measurements, cameras and camera equipment. Their manufacturing requires the use of complex inputs, given the technological complexity of procedures.<sup>4</sup> Those products are also characterized by high investment in R&D. The export growth of these products is rising steadily; the group has a high potential for innovation and long-term productivity growth.

Export manufacturing for all the countries and the EU-27 is divided on the basis of four different factors of production – raw materials, labor, physical capital and research intensive goods depending on the factor that is most intensively used in their production and calculated for the 2007-2012 period. Using DevInfo software,<sup>5</sup> factor intensity results for 2012 are separated from the period 2007 – 2011. As shown in Figure 5, in 2012 the majority of B&H export was generated by the highest level of unskilled labor and resource-intensive sectors (27.2%), while Serbia (24.6%) and Croatia (25.4%) recorded a similar but lower level of resource intensive products.

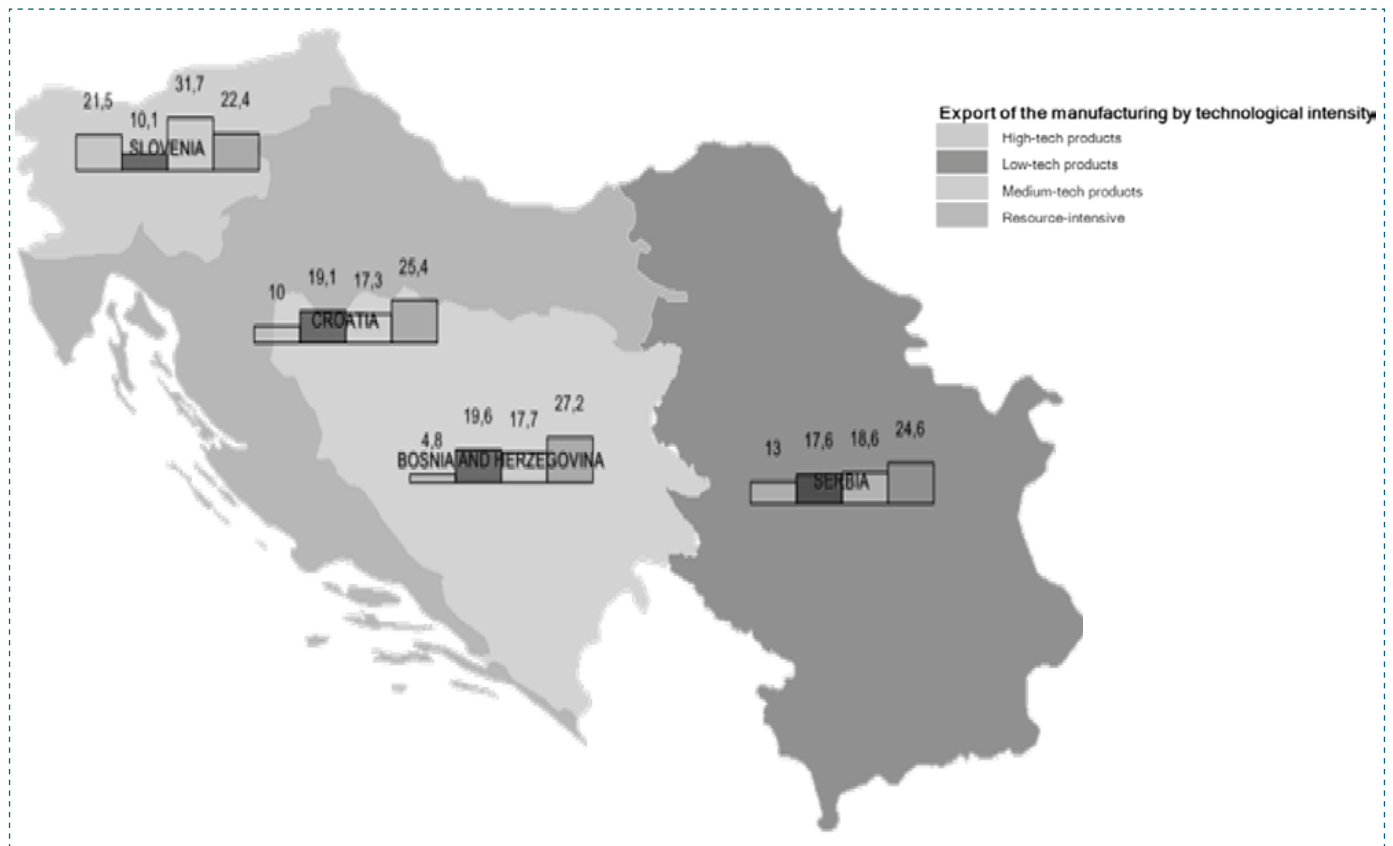
4 In the compilation of BoP, the responsibility is shared between Eurostat and the ECB. Eurostat focuses on quarterly and annual aggregates of the EU-27 and on detailed ITS (International Trade in Services) data for the euro area also, whereas the European Central Bank (ECB) is in charge of compiling and disseminating the euro area monthly and quarterly balance of payments statistics.

For more information on euro area Balance of Payments data, please refer to the ECB web site <http://www.ecb.int/stats/external/html/index.en.html> and the International Monetary Fund site <http://dsbb.imf.org/Applications/web/euronote>

5 DevInfo software's specific purpose is to store existing data, identify gaps in the Millennium Development Goals (MDGs) indicators, and provide a single entry point for data on the MDG indicators.



Figure 5: Export manufacturing by technological intensity, 2012.

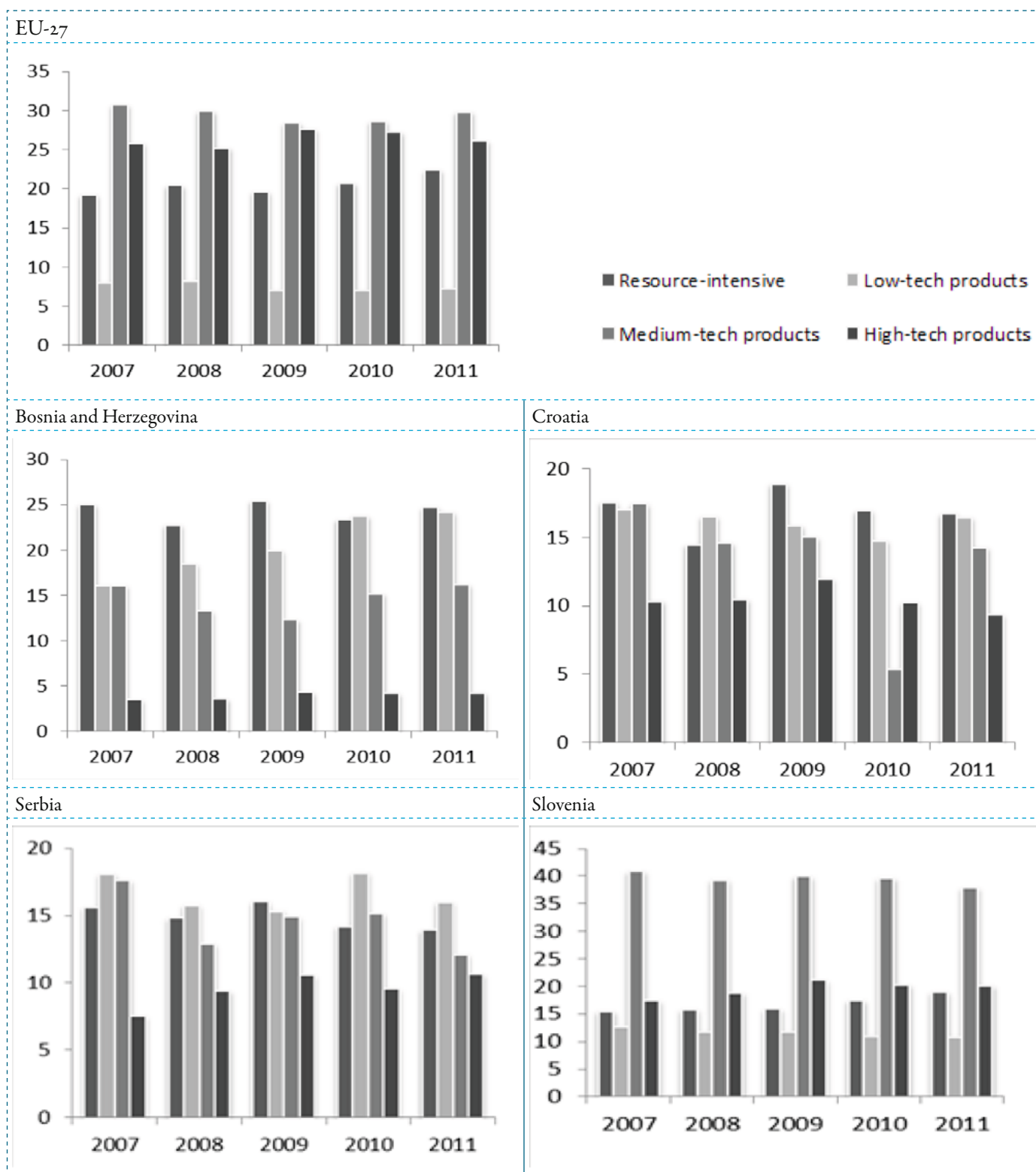


Sources: ITC and authors' calculation

Note: See Appendix 2.

Human capital and technology intensive products that are produced with a much higher value added are produced in Slovenia. It is particularly important to note the dominant role of technology-intensive products in the export structure, characteristic of almost all economically developed countries.

Figure 6: Export manufacturing by technological intensity in % (2007-2011)



Sources: ITC and authors' calculation

Note: See Appendix 2.



In comparison with the EU-27, we still observe a large gap in terms of factor intensity performance, particularly with regard to B&H, whose transition process was delayed by the political conflict in the post-war years. Moreover, this gap has increased over the observed period, partly due to the fact that growth was generally slower than in the EU-27 countries.

Manufacturing export results for Slovenia, out of all the analyzed countries, are the most similar to those of the EU-27 countries. Slovenia, similarly to the EU-27, also experienced some improvements towards medium-technology and capital-intensive products in 2007, the pre-crisis year. This trend appears to have reversed in 2009. In comparison with the other candidate countries, Slovenia has a relatively sizeable output of high-technology, research and higher education-intensive goods. The country has been gradually increasing its exports of pharmaceuticals and machinery, which may imply that it is improving its technological base and moving up the quality ladder. These results are even stronger when looking at net export data, where a clear retreat from low-technology and labor-intensive products and an orientation towards research-based and high-technology goods can be seen. The analysis of export unit values supports these findings, as the export unit values for several of these sectors have increased for the observed period.

When disaggregating the export into four sectors and observing B&H manufacturing export, we can conclude that it expanded its market share in medium-technology and resource-based manufactures which do not require higher-skilled workers. Despite some restructuring in the overall composition of trade, B&H has moved slowly away from products requiring unskilled labor, a low level of technology and significant resources (including primary products). This makes B&H increasingly vulnerable to competition from Asia and possibly other low-wage SEE region countries.

Serbia appears to have been moving away from exporting low-technology products faster than the other countries. In line with the observed increases in capital and research-intensive goods, it has expanded its market share in medium-technology manufactures which require higher-skilled workers. Similarly, the unit values for several types of machinery and transport equipment have increased over time.

In comparison with the other candidate countries, Croatia has a relatively sizeable output of high-technology, research and higher education-intensive goods. The country has gradually been increasing its exports of pharmaceuticals and machinery, which may imply that it is improving its technological base and moving up the quality ladder. These results are even stronger when looking at net export data, where a clear retreat from low-technology and labor-intensive products and an orientation towards research-based and high-technology goods can be seen. Furthermore, the analysis of export unit values supports these findings, as the export unit values for several of these sectors have increased over the period.

Despite improvements over the last years, the majority of the exports of all the countries are still generated by unskilled labor and resource-intensive sectors. Given increasing competition from Asia, this can be a challenge to further growth. Negative developments in overall trade levels and gains in world export market shares and the export of all countries still remain below those of the EU-27. Moreover, trade has not yet contributed to GDP growth in these countries, as they have registered trade deficits in excess of sustainable levels, particularly in terms of manufactured trade.

Governments' policies can improve the export performance of their countries by focusing on the structural foundations of the economy. A well-developed infrastructure and a highly educated workforce help high-tech manufacturing efficiently and effectively. Gross domestic expenditure on research and development (GERD) as the representative indicator of factor intensity export showed a mixed picture, as seen in Table 1.



Table 1: Gross Domestic Expenditure on R&amp;D as % of GDP (2007-2012)

	2007	2008	2009	2010	2011	2012
EU-27	1.84	1.91	2.01	2.00	2.04	2.06
Austria	2.43	2.59	2.61	2.74	2.68	2.81
Belgium	1.84	1.92	1.97	2.05	2.15	2.24
Bosnia&Herzegovina*	0.02	0.03	0.02	0.03	0.02	0.27**
Bulgaria	0.44	0.46	0.51	0.59	0.55	0.62
Croatia	0.79	0.88	0.84	0.74	0.75	0.75
Cyprus	0.40	0.39	0.45	0.45	0.46	0.43
Czech Republic	1.31	1.24	1.30	1.34	1.56	1.79
Denmark	2.51	2.78	3.07	2.94	2.97	3.02
Estonia	1.07	1.26	1.40	1.58	2.34	2.16
Finland	3.35	3.55	3.75	3.73	3.64	3.42
France	2.02	2.06	2.21	2.18	2.19	2.23
Germany	2.45	2.60	2.73	2.72	2.80	2.88
Greece	0.58	0.66	0.63	0.60	0.67	0.69
Hungary	0.97	0.99	1.14	1.15	1.20	1.27
Ireland	1.24	1.39	1.63	1.62	1.53	1.58
Italy	1.13	1.16	1.22	1.22	1.21	1.27
Japan	3.46	3.47	3.36	3.25	3.38	:
Latvia	0.56	0.58	0.45	0.60	0.70	0.66
Lithuania	0.80	0.79	0.83	0.78	0.90	0.90
Luxembourg	1.65	1.65	1.72	1.50	1.41	1.16
Malta	0.55	0.53	0.52	0.64	0.70	0.86
Netherlands	1.70	1.65	1.69	1.72	1.89	1.97
Poland	0.56	0.60	0.67	0.72	0.75	0.89
Portugal	1.12	1.45	1.58	1.53	1.46	1.37
Romania	0.52	0.57	0.46	0.45	0.49	0.48
Serbia	:	0.38	0.92	0.79	0.77	0.96
Slovakia	0.45	0.46	0.47	0.62	0.67	0.81
Slovenia	1.42	1.63	1.82	2.06	2.43	2.58
South Korea	3.21	3.36	3.56	3.74	4.04	:
Spain	1.23	1.32	1.35	1.35	1.32	1.27
Sweden	3.26	3.50	3.42	3.22	3.22	3.28
Turkey	0.72	0.73	0.85	0.84	0.86	0.92
United Kingdom	1.69	1.69	1.75	1.69	1.69	1.63
United States	2.63	2.77	2.82	2.74	2.77	2.81

Source: Eurostat. Gross domestic expenditure on R&D (GERD); \*\*B&H: 2012, Eurostat; \*Data source for B&H R&D indicator GERD: 2007-2011 based on UNESCO UIS estimate.

B&H recorded the smallest share of R&D expenditure as % of GDP in comparison with the other analyzed SEE countries. At the same time more developed countries have recorded the trend of a high share of spending on R&D.



## METHODOLOGY FOR MEASURING REVEALED COMPARATIVE ADVANTAGES (RCA)

The subject of this analysis is the comparative export advantage of selected SEE countries (B&H, Croatia, Serbia, Slovenia and the EU-27) in international commercial relations. For the purpose of this analysis Balassa's Index-RCA (Utkulu and Seymen, 2004) methodology has been used.

RCA is expressed as follows:

$$RCA_{kj} = \frac{X_k^j / \sum_k X_k^j}{\sum_j X_k^j / \sum_k \sum_j X_k^j} \quad (1)$$

Where

X - represents exports

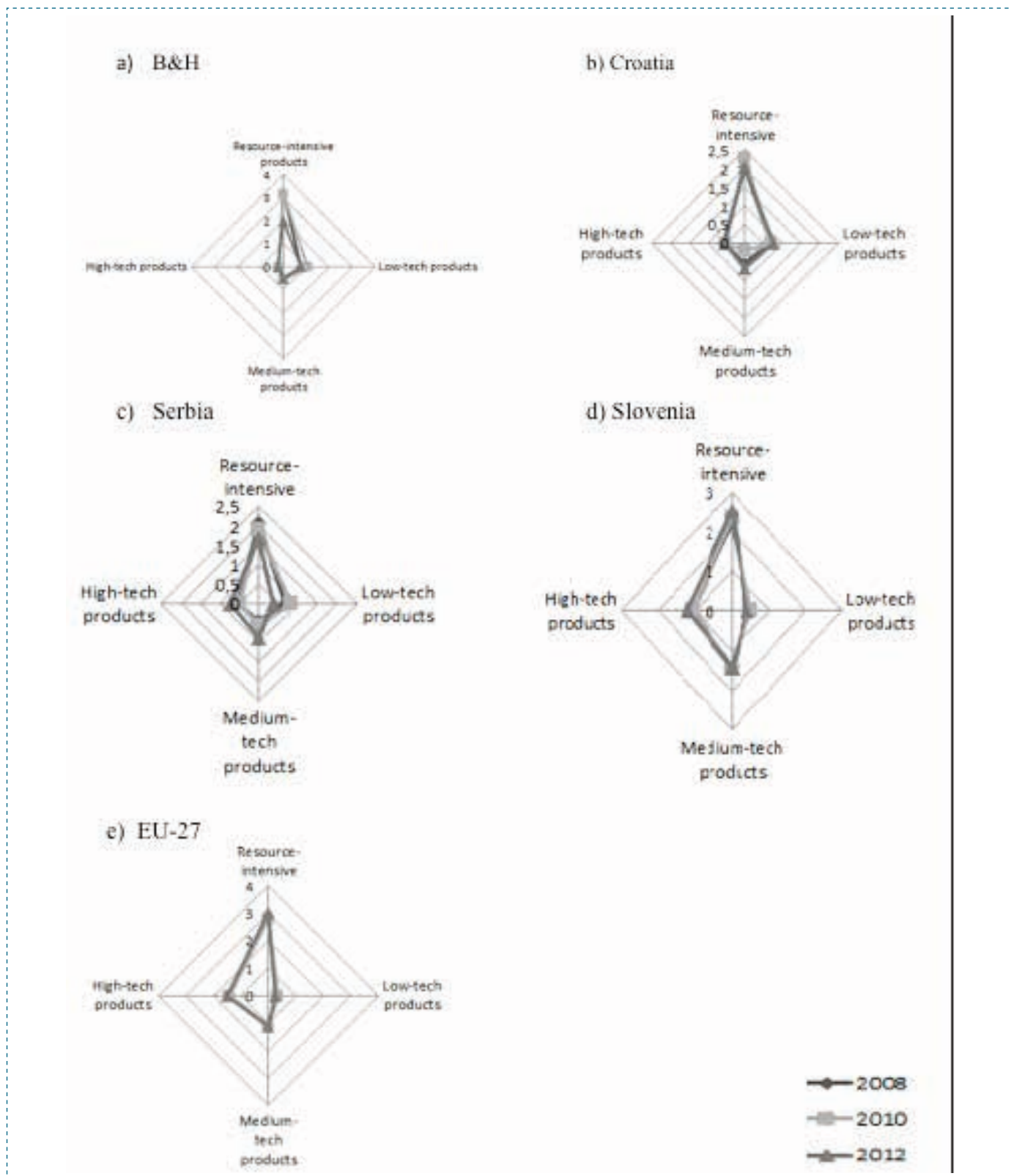
j - represents indices of a country

k - represents indices of a product

$$1 < RCA < 1$$

The RCA index interprets values results that are less and more than 1. However, for a group of products where  $RCA > 1$ , we can say that according to the economic analysis, that group of products has a comparative advantage for manufacturing compared to others. On the other side, if the RCA is less than unity, the country has a comparative disadvantage for that group of products. The empirical analysis of this paper is based on the revealed comparative advantage (RCA). Since we are interested in competitiveness, we measure the RCA for some SEE countries (B&H, Serbia, Croatia, Slovenia) within a European context (the EU-27), comparing certain groups of products at the level of international export for individual groups of products using data from the International Trade Centre (ITC). The results of the RCA index in the selected SEE countries and the EU-27 are presented in Figure 7.

Figure 7: RCA Index by selected SEE countries and EU-27



Sources: ITC, authors' calculation.

Note: See Appendix 3.





Based on our results for the RCA index in the selected SEE countries in certain years (2008, 2010 and 2012), we can observe that the lowest comparative advantages are in B&H. B&H has very considerable advantages in manufacturing low resource-intensive products for all three analyzed years. For the same years, Serbia and Croatia are not ranked well in terms of the RCA index because their values are below 1. By analyzing Slovenia in international relations it can be observed that Slovenia is best ranked in manufacturing high-tech products because the value of the RCA index exceeds 1 in all three years. Slovenia also has a comparative advantage in manufacturing medium-tech products and resource-intensive products in the analyzed years. The EU-27 Member States have shown a comparative advantage in manufacturing medium-tech products, high-tech products and resource-intensive products.

Nevertheless, B&H recorded a positive trend measured by the RCA for the group of high-tech products in the analyzed years. At the same time, the other analyzed countries, including the EU-27, recorded a downward trend measured by the RCA, especially in years 2008 and 2010, which can be interpreted as a consequence of the financial and economic crisis (see Appendix 3).

## CONCLUSION

This paper provides a comprehensive analysis of external competitiveness of the selected SEE countries in the period 2007-2012. In a world of increasing globalization, where political, economic and technological barriers are rapidly disappearing, the ability of a country to participate in global activity is an important indicator of its performance and competitiveness. If we define export performance as the sign of a country's competitiveness in the long run, we have considered indicators such as those related to structural and technological characteristics of manufacturing exports. Given the underlying ambition to join the EU, comparisons are drawn between the selected SEE countries and those in the EU-27. With this analysis, we aim to contribute to the export policy discussion on measures for achieving sustainable growth. The overall competitiveness of analyzed countries (as measured by export market share) has decreased, despite the fact that the countries and their exports have generally remained below their potential level.

In comparison with the EU-27, we still observe a large gap in terms of factor intensity performance, particularly with regard to B&H, whose transition process was delayed by the political conflict in the post-war years. Moreover, this gap has increased over the observed period, partly due to the fact that growth was generally slower than in the EU-27 countries. Despite improvements over the last years, the majority of the exports of all the analyzed countries are still generated by unskilled labor and resource-intensive sectors. Given increasing competition from Asia, this can present a challenge to further growth. Negative developments in overall trade levels and gains in world export market shares and the export of all countries still remain below those of the EU-27. Moreover, trade has not yet contributed to GDP growth in these countries, as they have registered trade deficits in excess of sustainable levels, particularly in terms of manufactured trade. Based on our findings of the RCA index in the selected SEE countries and the EU-27, we can confirm that among them Slovenia is best ranked. Slovenia has the highest RCA index in relation to Croatia, B&H and Serbia in manufacturing high-tech, medium-tech and resource-intensive products.

Growing integration of global economy has resulted in a substantial increase in the value of cross-border trade and financial flows, as measured by the balance of payments statistics. National data reveal a mixed picture in recent years. Although the current account balances of the biggest economies remained relatively stable, many smaller countries such as the analyzed SEE countries, should direct their macroeconomic policies at reducing their high current account deficits. By looking at export characteristics, it can be concluded that all the observed countries have a negative trade balance with a tendency to an increasing trade deficit. All the countries have also shown a deterioration in their exports in terms of the manufacturing export. The outlook for export



growth is rather uncertain for these countries, as they are vulnerable to competition from other emerging markets. However, some of the selected SEE countries, most notably Slovenia, have managed to shift their exports towards more complex industrial products (such as metal products and machinery) for which there is an increased demand in global markets.



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*Appendix 1: Share in World Export by countries, in %, 2007-2012*

<b>World export shares</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>
Bosnia and Herzegovina	0.03	0.03	0.03	0.03	0.03	0.03
Croatia	0.09	0.09	0.08	0.08	0.07	0.07
Serbia	0.06	0.07	0.07	0.06	0.06	0.06
Slovenia	0.002	0.002	0.002	0.002	0.002	0.001
<b>Trade balance</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>
Bosnia and Herzegovina	-36.07	-38.34	-25.52	-26.23	-28.37	-28.74
Croatia	-22.42	-23.56	-17.09	-13.84	-15.02	-14.99
Serbia	-24.95	-24.94	-19.11	-18.76	-18.47	-20.16
Slovenia	-0.06	-0.09	-0.03	-0.05	-0.04	-0.03

Source: ITC and authors' calculation



*Appendix 2: Export manufacturing by technological intensity, share in %, 2007-2012*

<b>B&amp;H</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>
Resource-intensive products	24.98	22.76	25.43	23.34	24.66	14.94
Low-tech products	16.09	18.44	19.92	23.74	24.16	19.56
Medium-tech products	16.09	13.23	12.29	15.18	16.19	13.71
High-tech products	3.47	3.56	4.33	4.21	4.28	4.83

Source: ITC and authors' calculation

<b>Croatia</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>
Resource-intensive	17.60	14.49	18.93	16.96	16.74	15.49
Low-tech products	17.01	16.54	15.88	14.80	16.48	19.09
Medium-tech products	17.46	14.59	15.03	5.39	14.28	17.33
High-tech products	10.37	10.47	11.98	10.25	9.36	9.98

Source: ITC and authors' calculation

<b>Serbia</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>
Resource-intensive	15.60	14.82	16.05	14.20	13.92	12.55
Low-tech products	18.06	15.76	15.32	18.16	15.99	7.78
Medium-tech products	17.60	12.91	14.88	15.15	12.10	18.64
High-tech products	7.51	9.39	10.56	9.52	10.66	13.03

Source: ITC and authors' calculation

<b>Slovenia</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>
Resource-intensive	15.50	15.80	15.90	17.50	19.00	19.40
Low-tech products	12.60	11.70	11.60	11.00	10.80	10.10
Medium-tech products	40.90	39.30	39.90	39.60	37.90	36.90
High-tech products	17.40	18.80	21.10	20.30	20.10	21.50

Source: ITC and authors' calculation

<b>EU-27</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>
Resource-intensive	19.20	20.40	19.60	20.70	22.40	23.20
Low-tech products	8.00	8.20	7.00	7.00	7.20	6.50
Medium-tech products	30.70	29.90	28.40	28.60	29.80	28.90
High-tech products	25.80	25.20	27.60	27.20	26.10	26.60

Source: ITC and authors' calculation

*Appendix 3: RCA Index by countries, 2008, 2010, 2012*

Country	RCA		
	2008	2010	2012
<b>B&amp;H</b>			
Resource-intensive products	3.203551	3.113387	1.958923
Low-tech products	0.756732	1.076495	0.780415
Medium-tech products	0.481464	0.562776	0.522003
High-tech products	0.203732	0.217303	0.27144
<b>Croatia</b>	<b>2008</b>	<b>2010</b>	<b>2012</b>
Resource-intensive products	2.039519	2.262341	2.031038
Low-tech products	0.678761	0.671109	0.761663
Medium-tech products	0.530957	0.199826	0.659833
High-tech products	0.599177	0.529062	0.560863
<b>Serbia</b>	<b>2008</b>	<b>2010</b>	<b>2012</b>
Resource-intensive products	2.085968	1.894177	1.645547
Low-tech products	0.646751	0.823469	0.352786
Medium-tech products	0.469818	0.551654	0.85141
High-tech products	0.537371	0.491383	0.732269
<b>Slovenia</b>	<b>2008</b>	<b>2010</b>	<b>2012</b>
Resource-intensive products	2.223906	2.334373	2.543715
Low-tech products	0.480139	0.498797	0.402975
Medium-tech products	1.430199	1.468112	1.404954
High-tech products	1.075886	1.047801	1.208271
<b>EU-27</b>	<b>2008</b>	<b>2010</b>	<b>2012</b>
Resource-intensive products	2.871373	2.76123	3.041968
Low-tech products	0.336508	0.317416	0.25934
Medium-tech products	1.088115	1.060303	1.100357
High-tech products	1.442145	1.403951	1.494884

Source: authors' calculation



# Testing Purchasing Power Parity in Several G-20 Countries: Preliminary Estimates

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## *ABSTRACT*

We test the Purchasing Power Parity (PPP) proposition for a set of seventeen major economies over the period January 1999 to May 2014. Because of the documented weaknesses of linear specifications in examining this exchange rate concept, we employ a nonlinear unit root test based on the exponential smooth transition autoregressive model. The results of unit root tests for the US dollar-based real exchange rate series indicate that PPP is not valid for the majority of economies in the sample. Following our estimates, with few exceptions, the PPP is not appropriate for determining the equilibrium exchange rates of G-20 countries.

*Keywords:* **purchasing power parity, nonlinear unit root test, G-20 countries JEL**

**Classification: C20, E31, F31, F41.**

## INTRODUCTION

The theory of Purchasing Power Parity (PPP) states that exchange rate movements are primarily determined by changes in domestic and foreign prices. This simple but powerful exchange rate theory with only slight modifications since its inception remains one of the basic ingredients for a wide range of contemporary international macroeconomic models. The popularity of PPP has been additionally boosted by a huge body of studies which examine the long-run empirical relationship between exchange rate movements and shifts in relative prices. In order to provide robust empirical support for the PPP theory, researchers frequently experiment with new estimation techniques, with different data sets and by testing the theory on large and various country samples. As emphasized by Taylor and Taylor (2004), if the speed of convergence toward the PPP level is increasing with the growing deviation from the equilibrium exchange rate parity, then the otherwise widely used linear specification of PPP testing is inappropriate (Taylor and Taylor, 2004). Taylor (2006) suggests that the adjustment of exchange rates can be nonlinear because of transaction costs in international trade and significant trade barriers. Important nonlinearities can also be detected in cases of heterogeneous interactions of traders in the foreign exchange market concerning the expected exchange rate adjustment. Taylor (2006) quotes an additional factor of exchange rate nonlinearity stemming from the coordination effect of intervention by monetary authorities on the main traders in situations of fundamental exchange rate misalignments.

There are only few studies which test the validity of PPP for the sample of biggest economies, predominantly G-7 countries (Akdi et al. 2009; Chang et al., 2010; Chang et al., 2012). Chang et al. (2010) and Chang et al. (2012) report about the results which are mainly favourable to the PPP hypothesis. Further, Lee and Chou (2013) apply the panel SURADF test with Fourier function to analyze the real exchange rates among the G-20 countries. The purpose of our paper is thus to extend the list of PPP studies by employing, in addition to the conventional augmented Dickey-Fuller (ADF) test, the Kapetanios et al. (2003) (hereafter KSS) unit root test that explains possible nonlinear behavior of the real exchange rates for countries in the group of G-20. Since the members of G-20 group constitute the core of international monetary system and the corresponding exchange rate arrangements, it is particularly important research question, whether the exchange rate movements in these countries match up with the PPP pattern.

The paper is divided into following four sections. After the introduction, section 2 presents the procedure for the KSS test. The characteristics of data and the empirical results are summarized in section 3. The main implication of the study is given in the concluding part of the article.

## PRESENTATION OF THE METHODOLOGY

Kapetanios et al. (2003) developed a test for the null hypothesis of unit root against the alternative hypothesis of a nonlinear stationary smooth transition autoregressive (STAR) model. The authors attempted to distinguish between the nonstationary linear processes and the stationary nonlinear ones. The motivation for the development of the new test lies in the persistent failure of the standard ADF test to reject the null of a unit root. Consequently, two alternative frameworks for unit root testing were proposed in recent years. The first approach utilizes panel tests and their higher power in comparison to standard unit root tests. The second approach incorporates stationary models other than the simple AR or ARMA under the alternative hypothesis, including nonlinear transition dynamics. Kapetanios et al. (2003) extended the last framework by analyzing a particular kind of nonlinear dynamics, namely exponential smooth transition autoregressive (ESTAR) models.





The smooth transition autoregressive (STAR) model of order 1 is given by the equation

$$y_t = \beta y_{t-1} + \beta^* y_{t-1} G(\gamma, c; y_{t-d}) + \varepsilon_t, \quad t = 1, 2, \dots, T, \quad d \geq 1, \quad (1)$$

where  $\beta$  and  $\beta^*$  are unknown parameters and  $\varepsilon_t$  is a sequence of independent identically distributed errors. Initially,  $y_t$  is assumed to be a zero-mean process, but the framework can easily be extended to include more general processes with non-zero mean and time trend.  $G$  represents a continuous transition function bounded between 0 and 1. The slope parameter  $\gamma$  is an indicator of the speed of transition between 0 and 1, whereas the threshold parameter  $c$  points to where the transition takes place.  $y_{t-d}$  is the transition variable and stands for the variable  $y$  lagged  $d$  times. The most popular functional forms are the Logistic Smooth Transition Autoregressive (LSTAR) form with logistic transition function and ESTAR with exponential transition function. The LSTAR transition function is monotonously increasing, while ESTAR is U-shaped around  $c$  and thus enables reswitching. The ESTAR functional form can be defined as

$$G(\gamma, c; y_{t-d}) = 1 - \exp(-\gamma(y_{t-d} - c)^2) \quad (2)$$

Kapetanios et al. (2003) applied the ESTAR transition function with  $c$  equal to zero. By substituting  $G$  in equation (1) with the ESTAR transition function from equation (2), we obtain the ESTAR model

$$y_t = \beta y_{t-1} + \beta^* y_{t-1} [1 - \exp(-\gamma \cdot y_{t-d}^2)] + \varepsilon_t \quad (3)$$

The null hypothesis of unit root implies  $\beta = 1$  and  $\gamma = 0$ , since  $G(0; y_{t-d}) = 0$ . Model (3) postulates the nonstationary linear First-Order Autoregressive (AR(1)) model

$$y_t = \beta y_{t-1} + \varepsilon_t \quad (4)$$

under the null hypothesis and a stationary model (with  $\gamma > 0$ )

$$y_t = [\beta + \beta^* G(\gamma; y_{t-d})] y_{t-1} + \varepsilon_t \quad 0 < G(\gamma; y_{t-d}) < 1 \quad (5)$$

under the alternative. When  $y_{t-d}$  is close to zero, model (5) resembles a unit root process, since  $G(\gamma; 0) = 0$ . For large values of  $y_{t-d}$  on the other hand, we obtain an approximation of the linear AR(1) with the root equal to  $\beta + \beta^*$ . We assume that  $-1 < \beta + \beta^* < 1$  (i.e.  $-2 < \beta^* < 0$ ), as this condition implies stable roots and a stationary AR(1) model.

The null hypothesis  $H_0: \gamma = 0$  needs to be tested against the alternative  $H_1: \gamma > 0$ .  $\beta^*$  is not identified under the null, and testing such a hypothesis is not feasible. To overcome this problem, Kapetanios et al. (2003) used the Taylor series approximation, as interpreted by Granger and Teräsvirta (1993). In the first step, the authors assumed  $d = 1$  (which can be done without loss of generality) and respecified the ESTAR model (3) as

$$\Delta y_t = \beta^* y_{t-1} [1 - \exp(-\gamma \cdot y_{t-d}^2)] + \varepsilon_t \quad (6)$$



After replacing the right-hand side expression with its first-order Taylor approximation, one obtains the following auxiliary regression:

$$\Delta y_t = \delta y_{d-1}^3 + error. \quad (7)$$

Using the t-statistic approach, the Nonlinear Augmented Dickey-Fuller (NLADF) statistic is defined as

$$NLADF = \frac{\hat{\delta}}{\sigma_{\hat{\delta}}}, \quad (8)$$

where  $\hat{\delta}$  denotes the Ordinary Least Squares (OLS) estimate from auxiliary regression (7) and  $\sigma_{\hat{\delta}}$  its standard error.

In a more general framework, when the errors of model (6) are serially correlated, the equation is augmented with lagged differences of the process  $y_t$ :

$$\Delta y_t = \sum_{j=1}^p \beta_j \Delta y_{t-j} + \beta^* y_{t-1} [1 - \exp(-\gamma \cdot y_{t-d}^2)] + \varepsilon_t, \quad (9)$$

as first proposed by Dickey and Fuller in the derivation of the ADF test. The number of lags ( $p$ ) is defined as the minimal number that removes residual autocorrelation. Auxiliary regression augmented with  $p$  lagged differences can be given as

$$\Delta y_t = \sum_{j=1}^p \beta_j \Delta y_{t-j} + \delta y_{d-1}^3 + error. \quad (10)$$

The NLADF test statistic is calculated from equation (8), as before. Kapetanios et al. (2003) derived the limiting nonstandard distribution of the NLADF statistic that involves Brownian motion.

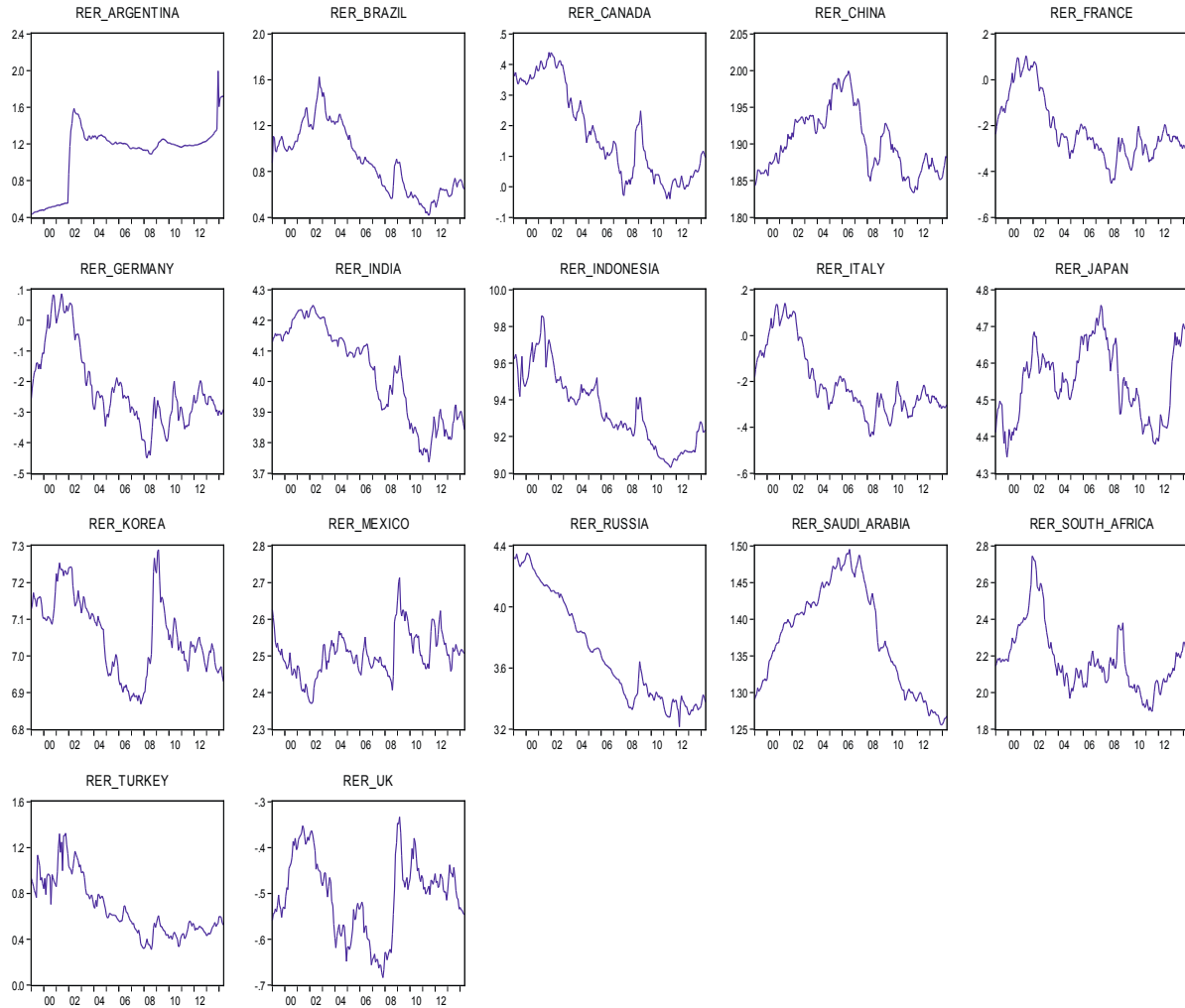
## DATA AND EMPIRICAL ESTIMATES

The investigated sample consisted of the following members of the G-20 group: Argentina, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, South Korea, Mexico, Russia, Saudi Arabia, South Africa, Turkey and United Kingdom. For Australia the series for CPI was available only at the quarterly level, therefore, we operated with seventeen individual economies.

The monthly averages of nominal exchange rates and consumer price indices were obtained from the IMF International Financial Statistics and from the Eurostat, whereas the CPI for Argentina and China from [www.tradingeconomics.com](http://www.tradingeconomics.com). The US dollar-based real exchange rates covered the period from January 1999 to May 2014. For all countries in the sample, the consumer price indices referred to year 2010. The dynamics of real exchange rates of individual countries in G-20 is depicted in Figure 1.



Figure 1: The real exchange rates of G-20 countries



The results of the KSS test and the standard ADF test for models with constant and for models with constant and time trend are given in Table 1.

Table 1: Results of unit root test for selected countries

Country	Trend <i>p</i> -value	Intercept			Intercept and time trend		
		No. of lags	KSS	ADF	No. of lags	KSS	ADF
Argentina	0.0000	0	-3.2543**	-1.5513	2	-2.1807	-2.0566
Brazil	0.0000	1	-2.2546	-1.2656	1	-2.8758	-1.9535
Canada	0.0000	0	-1.2323	-1.3047	0	-1.4820	-1.2278
China	0.0002	12	-1.6801	-1.9583	12	-1.7142	-2.4653
France	0.0000	0	-1.1910	-1.1494	0	-2.2666	-2.0904
Germany	0.0000	0	-1.3149	-1.2319	0	-2.4974	-2.2467
India	0.0000	5	-1.4800	-0.8886	5	-2.9561	-2.9173
Indonesia	0.0000	1	-2.4529	-1.7517	2	-2.4863	-2.1611
Italy	0.0000	0	-1.1662	-0.9928	0	-2.2882	-2.0714
Japan	0.1899	1	-2.5202	-2.0186	1	-2.4792	-2.0266
South Korea	0.0000	1	-3.0819**	-2.1032	1	-3.3096*	-2.5405
Mexico	0.0000	1	-3.3773**	-3.7055***	1	-3.8830**	-4.2309***
Russia	0.0000	1	-1.8069	-1.4991	1	-0.8590	-1.5010
Saudi Arabia	0.0000	11	-1.5390	-1.2268	12	-2.7120	-2.5928
South Africa	0.0000	1	-1.6816	-1.9492	1	-2.1942	-2.2597
Turkey	0.0000	14	-1.7268	-1.1050	0	-3.4455**	-2.9500
UK	0.3373	1	-2.4538	-2.1863	1	-2.5888	-2.2140

Notes: The number of lags in the auxiliary regression is defined as the minimal number that removes residual autocorrelation. The 1%, 5% and 10% asymptotic critical values for ADF with intercept are -3.46, -2.88 and -2.57, respectively. The 1%, 5% and 10% asymptotic critical values for ADF with intercept and trend are -4.01, -3.43 and -3.14, respectively. The 1%, 5% and 10% asymptotic critical values for KSS with intercept are -3.48, -2.93 and -2.66, respectively. The 1%, 5% and 10% asymptotic critical values for KSS with intercept and trend are -3.93, -3.40 and -3.13, respectively. The critical values for KSS are taken from Kapetanios et al. (2003).

\*\*\*, \*\* and \* statistically significant at the 1%, 5% and 10% levels, respectively.

Results from the standard ADF unit root test with and without the trend suggest that we can reject the null hypothesis of non-stationarity of real exchange rate only for Mexico. By employing the KSS test in models without the trend element, the nonstationarity hypothesis of real exchange rates is rejected in the case of Argentina, South Korea and Mexico. When the trend element is examined within the KSS framework, the stationarity of bilateral real exchange rates among the members of G-20 group holds again for just three countries: South Korea, Mexico and Turkey.



## CONCLUSION

This paper evaluated the PPP proposition by scrutinizing the stationarity properties of US dollar-based real exchange rates for the set of G-20 economies. The testing results clearly indicate that even after taking into account the nonlinear reversion of real exchange rates of countries in the group of G-20 we are able to confirm the validity of PPP only in the case of three countries. The PPP concept is therefore not appropriate for determining the equilibrium exchange rates of the majority of countries in our sample. Lack of PPP evidence probably also reflects insufficient coordination of monetary and exchange rate policies among the selected countries. Because these results are in contrast with findings of Lee and Chou (2013), further empirical examination is needed to solve the PPP puzzle for developed market economies.



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# The Definition of Virtual Currencies and Bitcoin Within the Framework of Financial Regulators' Views and in Terms of Private and Electronic Money: International and Russian Practices

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## *ABSTRACT*

The paper analyzes possible definitions of cryptocurrencies in legislation and economics. With this in mind, views of the European Central Bank, Financial Crimes Enforcement Network and Financial Action Task Force regarding cryptocurrencies in general and Bitcoin in particular have been studied. The analysis covers the draft legislation to ban money surrogates in the Russian Federation, which is to introduce administrative liability for the issuance and circulation of cryptocurrencies. The author suggests two reasonable approaches towards defining Bitcoin and similar instruments. According to the first one Bitcoin is identified with cryptocurrency. The second one defines Bitcoin as private electronic money. The author reviews the arguments of representatives of the Austrian School on the existence of private money. What's more, the author proposes introducing some changes in the legislation of the Russian Federation in order to give legal status to cryptocurrencies. It has been concluded that Bitcoin or instruments that originated from it have significant development prospects as well as the potential to be used as a parallel currency.

*Keywords: Bitcoin, cryptocurrency, virtual currency, electronic money, private money, money surrogates*

Bitcoin receded into the background and was forgotten in the context of the sharp fall in the exchange rate, Bitcoin thefts, and the collapse of the Mt.Gox exchange and regulators' continuing concerns about the role of cryptocurrency on the illegal market. Nevertheless, Bitcoin has been and remains a newsmaker. Thus, at the end of 2014, Bitcoin became the ninth most popular payment method during sales on Black Friday and Cyber Monday; and at the end of January based on Bitcoin wallet Coinbase was opened the first regulated Bitcoin exchange, which has a license to operate in 24 states in the US.

The cryptocurrency Bitcoin gained extraordinary popularity in 2011 - 2013 for a variety of reasons. One of the main factors was the distrust of market participants in the global financial system and so-called fiat currency, a distrust that sharpened during the development of the global financial crisis and the Cypriot financial crisis. In addition, the rapid development of an Internet-based economy generates the inevitable interest of users in electronic money and currencies, and also in new payment technology. Lastly, investors are attracted by the high volatility of Bitcoins. Although the original audience of Bitcoin was young people drawn to computer technology, currently Bitcoin, along with securities and derivatives, is raising the interest of speculative investors.

It should be mentioned that at the current moment, there is not any country that has formed a legislative basis for regulating the issuing and circulation of cryptocurrencies and Bitcoins. There is the acute problem of the licensing and oversight of the activities of so-called Bitcoin exchanges, their integration into the global financial system, as well as the protection of clients from hackers.

At present, there is no international consensus on Bitcoin either on the part of regulators or the leading representatives of economic and legal sciences. The approaches to defining Bitcoin are rather diverse. They vary from considering the concept "Bitcoin" synonymous with a pyramid scheme to identifying Bitcoin with a commodity or gold equivalent.

## REGULATORS ON BITCOIN

The positions of financial market regulators in relation to Bitcoin may be conditionally divided into three groups: loyal, neutral, and categorical (see Table 1).

Logically, the group of loyal countries comprises those not limiting the circulation of Bitcoins or expressing concern over their speculative nature, anonymity, and other properties. A few of the countries in this group, Australia, Germany and Norway, for example, impose taxes on Bitcoin transactions.





*Table 1: The positions of regulators in relation to Bitcoins in selected countries*

Position	Country	Definition of Bitcoin
Loyal	Argentina	Money but not legal currency
	Australia	Asset for capital gains tax purposes
	Finland	Commodity
	Germany	Units of account, private money
	Great Britain	Single-purpose voucher, which could carry a value-added tax
	Japan	Commodity
	Norway	Asset upon which capital gains tax can be charged
	Singapore	Good or asset
	Sweden	Means of payment, asset like art or antiques
	USA	Cryptocurrency
Neutral	France	Unregulated, online money, not a true currency
	India	Decentralised digital currency
	Mexico	Digital currency
Categorical	China	Is not a currency
	Russia	Money surrogates
	Thailand	Electronic data

Logically, the group of loyal countries comprises those not limiting the circulation of Bitcoins or expressing concern over their speculative nature, anonymity, and other properties. A few of the countries in this group, Australia, Germany and Norway, for example, impose taxes on Bitcoin transactions.

Countries with a neutral position on Bitcoin warn their citizens against using them due to its risky and speculative nature; however, they do not prohibit direct transactions.

Finally, countries with a categorical position directly prohibit Bitcoin transactions.

The change of the People's Bank of China's position on Bitcoin is interesting. At the beginning of December 2013, the People's Bank of China banned the country's financial institutions from conducting transactions with cryptocurrencies, although transactions with Bitcoins by individuals were permitted. However, at the end of March 2014, the People's Bank already had ordered that any Bitcoin transactions must cease by April 15. It is noteworthy that Chinese investors were more active in the Bitcoin market. There were 15 Bitcoin exchanges in the country.

## EUROPEAN CENTRAL BANK (ECB) ABOUT VIRTUAL CURRENCIES AND BITCOIN

The ECB expressed its position upon the virtual currency in general and Bitcoin in particular in 2012, in a Guidance called “Virtual Currency Schemes”. The ECB defined virtual currency as “a type of unregulated, digital money, which is issued and usually controlled by its developers, and used and accepted among the members of a specific virtual community” (European Central Bank, 2012, p. 13). In the same document, the ECB recognizes that this definition may need to be adapted in future if fundamental characteristics change. The ECB defines the concept “virtual currency schemes” as a mechanism, which covers both the virtual currencies and their own dedicated retail payment systems. At the same time, the ECB introduces division of virtual currency schemes into three types: closed virtual currency schemes, virtual currency schemes with unidirectional flow and virtual currency schemes with bidirectional flow.

Closed virtual currency schemes have almost no link to the real economy and are connected with computer games. Sometimes they are called “in-game only” schemes. The virtual currency in this case can only be spent by purchasing virtual goods and services offered within the virtual community and it cannot be traded outside the virtual community. The well-known example of closed virtual currency schemes is World of Warcraft Gold.

Virtual currencies with unidirectional flow can be purchased directly using real currency at a specific exchange rate, but they cannot be exchanged back to the original currency. The scheme owner establishes the conversion conditions. These schemes allow the currency to be used to purchase virtual goods and services. Sometimes scheme owner may also allow the virtual currency to be used to purchase real goods and services. As examples of virtual currency schemes with unidirectional flow, we can mention about Facebook Credits, Nintendo Points and airlines’ frequent-flyer programs.

Virtual currencies with bidirectional flow can be bought and sold according to the exchange rates to real currency. The virtual currency seems to be similar to any other convertible currency with regard to its interoperability with the real world. Virtual currency schemes with bidirectional flow allow for the purchase of both virtual and real goods and services. One of examples of these schemes is Linden Dollars.

As for Bitcoin, the ECB considers it a virtual currency scheme with bidirectional flow but having certain innovations that make its use more similar to conventional money.

## FINANCIAL CRIMES ENFORCEMENT NETWORK (FINCEN) ABOUT VIRTUAL CURRENCIES AND BITCOIN

When defining the concept of Bitcoin within the financial system, it is necessary to note particularly the opinion of Financial Crimes Enforcement Network that has introduced the term “cryptocurrency” and has been making every effort to develop the legislative regulation of Bitcoin.



In the Guidance of March 18, 2013 FinCen handles such concepts as currency (“real” currency) and cryptocurrency. FinCen defines “real” currency as “the coin and paper money of the United States or of any other country that is designated as legal tender and that circulates and is customarily used and accepted as a medium of exchange in the country of issuance” (United States Department of the Treasury, FinCen, 2013, p. 1). Virtual currency, as opposed to real, was defined as “a medium of exchange that operates like a currency in some environments, but does not have all the attributes of real currency” (United States Department of the Treasury, FinCen, 2013, p. 1) FinCen emphasizes the fact that virtual currency does not have legal tender status in any jurisdiction. FinCen’s management addresses convertible virtual currency, which has an equivalent value in real currency, or acts as a substitute for real currency.

FinCen introduces a classification of participants of the virtual currency exchange into users, exchangers and administrators. The last two are money transmitters under FinCEN’s regulations and under the regulations implementing the BSA.

Regarding types of virtual currencies themselves, FinCen recognizes centralized and decentralized virtual currency. Bitcoin is to belong to the latter group.

In January 2014, FinCen issued new Guidance regarding cryptocurrency exchange operations in general and ones with Bitcoins in particular. The Guidance particularly focused on defining the segment of bodies, both citizens and organizations using Bitcoin “for personal purposes”. This category of Bitcoin investors (users) is not related to the money services business under FinCEN’s and BSA regulations (United States Department of the Treasury, FinCen, 2014).

## FINANCIAL ACTION TASK FORCE (FATF) ABOUT VIRTUAL CURRENCIES AND BITCOIN

FATF in its June Report “Virtual Currencies. Key Definitions and Potential AML / CFT Risks” introduces a glossary of terms related to cryptocurrency and represents their classification.

Virtual currency, according to the FATF, is “a digital representation of value that can be digitally traded and functions as a medium of exchange; and/or a unit of account; and/or a store of value, but does not have legal tender status (that is to say, when tendered to a creditor, is a valid and legal offer of payment) in any jurisdiction” (Financial Action Task Force, 2014, p. 4). Thus FATF identifies convertible (or open) and non-convertible (or closed) virtual currencies, as well as centralized and decentralized virtual currencies.

Convertible virtual currency has an equivalent value in real currency and can be exchanged for real currency. The examples of this type of currency include Bitcoin, e-Gold (defunct), Liberty Reserve (also defunct), Second Life Linden Dollars, WebMoney. Non-convertible virtual currency is intended to be specific to a particular virtual domain or world, such as a Massively Multiplayer Online Role-Playing Game or Amazon.com. According to the rules governing its use it cannot be exchanged for fiat currency. Examples include Project Entropia Dollars, Q Coins, World of Warcraft Gold.

Centralized virtual currencies have a single administrating authority — administrator that controls the system. An administrator has several functions: issuing the currency, establishing the rules for its use, maintaining a central payment ledger, and redeeming the currency. FATF considers E-gold (defunct), Liberty Reserve dollars/euros (defunct), Second Life “Linden dollars”, WebMoney “WM units”, and World of Warcraft Gold to be the currency of this type. Decentralized virtual currencies are distributed,

open-source, math-based, peer-to-peer virtual currencies that have no central administrating authority and no central monitoring or oversight. The brightest examples are Bitcoin, LiteCoin, and Ripple.

FATF lists known cases of virtual currency use in criminal activities (“Liberty Reserve”, “Silk Road”, and “Western Express International”) and expresses some concerns over this, but clearly defines Bitcoin’s prospects. FATF’s view on the virtual currency is similar to FinCen’s, and was probably based on it, taking into account the course of events.

Thus, the views of financial market regulators regarding virtual currencies are not uniform and base upon the concepts of virtual currency and electronic money.

## ON THE REGULATION OF VIRTUAL CURRENCY AND BITCOIN IN THE RUSSIAN FEDERATION

In the letter of January 27, 2014, the Bank of Russia warned citizens and businesses against using various virtual currencies, including Bitcoin. Yet now Bitcoin transactions in Russia are not prohibited, there has still been no liability neither criminal nor administrative for transactional activities of such kind.

The letter mentioned above identifies five features of Bitcoins that should cause concern among regulators (Bank of Russia Informational Letter, 2014):

1. Bitcoin is an unsecured instrument;
2. There is no entity responsible for Bitcoin (issuer);
3. Operations with Bitcoins are of a speculative nature;
4. The anonymous nature of Bitcoin domain and payments;
5. Bitcoin could possibly be used for illegal activities, even involuntarily.

Later, the Ministry of Finance of the Russian Federation pointed out the issues related to Bitcoin such as lack of a single issuance regulator and possible violations of the rights of the owners due to the lack of protection in judicial and administrative proceedings.

In our opinion, the biggest concerns for regulators are points two and four. Other points are inherent as to many world currencies and financial instruments, and listed in the letter purely notionally. The author considers the outlined circumstances in detail (Belomyttseva, 2014, p. 27).

In the spring session of 2015, the State Duma of the Russian Federation will consider a draft federal law “On Amendments being made to certain legislative acts of the Russian Federation” developed by the Ministry of Finance, introducing administrative liability for the issuance and circulation of Bitcoins. This document is designed to define the concept of “money surrogates”, which is Bitcoin is relegated to by legislators.



The draft defines “money surrogates” as objects of property rights, including electronic ones, used as a means of payment and (or) exchange and not prescribed by the federal law directly.

From our standpoint, the definition of “money surrogates” in the draft is quite consistent, but it does not serve its purpose – the prosecution of Bitcoin. In this sense, the definition of money surrogates covers all kinds of bonuses and bonus points, as well as gift certificates, fuel cards, frequent-flyer programs, online games currency and other similar instruments. By the virtue of their economic nature, they are rather private money than substitutes. Russia lacks legislative regulation of such products. Thus, many large retail chains, beauty salons, airline companies and other organizations, which have different kinds of bonus payments will automatically become an Administrative Code violators.

The draft also provides for the establishment of the mechanism for blocking information resources, which spread information conducive to the release of money surrogates and transactions involving them. The Russian Ministry of Communications is expected to block suspicious sites based on the decisions of the Bank of Russia.

The draft indicates four categories of administrative violations in the Russian Federation related to the issuance and circulation of money surrogates: emission of money surrogates; creation and distribution of software to issue money surrogates; deliberate dissemination of information conducive to the release of money surrogates and transactions involving them; turnover of money surrogates.

The amounts of penalties range from five to fifty thousand rubles for citizens, from twenty to one hundred thousand rubles for officials, and from ten thousand to one million rubles for legal entities.

It should be noted that it would be rather difficult to evidentiare the offense of Bitcoins issuance due to the juridical uncertainty and the lack of the issuer itself.

Russia’s position regarding the Bitcoin’s qualification is unique, however, in our opinion, too categorical and does not take into account the prospects for the development of virtual currency and payment systems (Belomytseva, 2015).

In our view, there are two reasonable approaches towards defining Bitcoin in legislation. One is based on the concept of currency and makes it possible to suggest the term “cryptocurrency” for Bitcoin. The other, which is based on the concept of electronic money, assumes the existence of non-fiat currencies and introduces the term “private electronic money”. In this case, the first approach is certainly easier, approved worldwide and is likely to cause less controversy, although the alternative one is also interesting.

## BITCOIN AS CRYPTOCURRENCY IN RUSSIA?

We face particular difficulties when discussing the potential opportunity for the cryptocurrency to be defined in Russian legislation. Namely, we need a systemic interpretation of article 75 of the Russian Constitution, article 140 of the Civil Code of the Russian Federation, article 27 of the Federal Law of July 10, 2002 N 86-FZ “On the Central Bank of the Russian Federation (Bank of Russia)” and article 1 of the Federal Law of December 10, 2003, N 173-FZ “On Currency Regulation and Currency Control”. The Constitution of the Russian Federation and the Federal Law “On the Central Bank” define ruble as the currency of the Russian Federation while the Civil Code identifies currency with money, not giving the definition for neither of them. Only the Federal Law “On Currency Regulation and Currency Control” is specific about defining currency, acting as a basic legal act in the field of currency legislation. This document defines the types of currency (currency of the Russian Federation and foreign currency) and

a limited list of instruments (currency in the form of banknotes, coins and facilities on bank accounts and deposits) which are the currency of the Russian Federation or foreign currency, respectively (RF Federal Law “On Currency Regulation and Currency Control” of 10 December, 2003). In this case, the legislation lacks the actual definition of currency that would determine what features should satisfy currency or its alternative, in order to be considered as such.

Due to this conflict of laws, the definition of cryptocurrency within the existing currency legislation is impossible and requires specification of the concept of currency in the Federal Law “On Currency Regulation and Currency Control”.

## BITCOIN AND ELECTRONIC MONEY

The first electronic money was issued in 1990s, while the concept itself emerged in the 80s. The EU first attempted to regulate electronic money in 2001. The European Commission provides a brief definition of electronic money: “a digital equivalent of cash, stored on an electronic device or remotely at a server” (European Commission). According to a more detailed definition from E-Money Directive (2009/110/EC), electronic money is “electronically, including magnetically, stored monetary value as represented by a claim on the issuer which is issued on receipt of funds for the purpose of making payment transactions ..., and which is accepted by a natural or legal person other than the electronic money issuer” (Directive 2009/110/EC of 16 September 2009). The definition of electronic money in the Russian Federation is slightly different from that of the accepted in Europe.

The definition of electronic money in the legislation of the Russian Federation appeared quite recently — in 2011 with the adoption of the Federal Law of 27 June, 2011 N 161-FZ “On the National Payment System”, while “Yandex.Money”, a system popular in Russia, was launched as early as 2002.

According to this law, electronic money is transferred by entity to another entity, who keeps accounts of the information provided about the amount of money without opening a bank account in order to fulfill the monetary obligations of the entity that transferred the funds towards third parties. Depositing client funds with an operator in a particular currency usually precedes generation of electronic money. Besides, involvement of a single emission and processing center is possible. Payments in electronic money systems are carried out in the well-known world currencies. Thus, electronic money is a digital means of expressing fiat currency. Only its form of existence, which is similar to that of Bitcoin, can be considered new. Consequently, electronic money cannot claim the status of an independent currency.

In the context of Bitcoin, the definition of electronic money can appear useful if we concede that private money exists. Private money can be defined as a non-state fiduciary money, issued into circulation by private organizations, and can be compared to Bitcoin for being non-state. The ideas that private entities should issue and regulate currencies were repeatedly expressed in economics, in particular, by the representatives of the Austrian School M. Rothbard, F. Hayek, and M. Friedman in separate proceedings. According to Rothbard (2010), money must be issued by private organizations on competition basis as well as all other goods. Hayek (1990) in his work “Denationalization of Money” assumed that it was possible to denationalize money and to keep the State away from issuing money and control over the banking sector (Hayek, 1990). Milton Friedman and Anna Schwartz in 1986 claimed that “leaving monetary and banking arrangements to the market would have produced a more satisfactory outcome than was actually achieved through governmental involvement” (Friedman, & Schwartz, 1986, p. 59).

In our opinion, Bitcoin can be defined as unique hybrid of private and electronic money that both existed for a long time apart from each other. This interpretation implies changes to be made to the Russian Federal Law “On the National Payment System”.





## THE FUTURE OF BITCOIN

In February 2015 the research company Juniper Research released a study “The Future of Cryptocurrency: Bitcoin & Altcoin Impact & Opportunities, 2015-2019”. The company estimates that the volume of transactions with cryptocurrency will decline by more than half: from \$71 billion (in 2014) to \$30 billion from (in 2015) (Juniper Research, 2015). The problems with the cryptocurrency exchanges, Bitcoin thefts and concerns of regulators about the role of cryptocurrency on the illegal market will act as the main reasons for that. Moreover, according to Juniper Research, the growth of the altcoin (cryptocurrency alternative to Bitcoin) use in the previous year emerged mainly due to a brief burst of activity in Dogecoin, Litecoin and Auroracoin in the first quarter of 2014, which then came to nothing. By the end of the year, the volume of such transactions in dollars was less than 5% of their number at the beginning of the year.

Juniper Research emphasizes the role of the developments and progress related to cryptocurrency, and in the field of online payments on the whole. Ripple Labs (the developer of Ripple protocol for international financial transfers) has already focused on further work, and we will be able to see the evolution of other players in the cryptocurrency market over the medium term.

## CONCLUSION

In summary, we can state that Bitcoin or an instrument that may originate from it is likely to have a significant potential for development in the next decade, and the major problem now is precisely its legalization. In Russia, it is a lack of new legislation defining the concept of “cryptocurrency” or “private e-money”. In the short term, Bitcoin or its equivalent is unlikely to rival the ruble, but can be used, for instance, as a parallel currency.



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# Internet Business Potentials for Seniors - The Case of Air-tickets

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## *ABSTRACT*

Information and communication technologies (ICT) can enrich elderly people's lives in various ways. The objective of this single point study among elderly people is to present potentials for elderly people in the case of purchasing flight tickets and in arranging travel activities online. The results showed statistically significant difference in purchasing flight tickets and in arranging travel activities online according to elderly people's living arrangements (alone, with partners, children or friend), and according to where they live (house, apartment, home for elderly people etc.) and how they live (independent, partly independently, dependently).

*Keywords: Elderly people, Information and communication technology, Internet*

## INTRODUCTION

We are facing rapid changes in demographic structure, caused by lower birth rates and lower mortality of elderly people (The Economist, 2009). Despite this phenomenon, elderly people are nowadays much more active and thus healthier, more independent, more educated and also more obligation-free compared to elderly in the past (Martin & Preston, 1994; Zimmer, Brayley, & Searle, 1995). Reason for this is also in the use of information and communication technology (ICT), however elderly people still do not fully exploit technology. It is a fact that in the past several years there has been an increased interest in the effect of ICT for active and healthy aging (Gilhooly, Gilhooly, & Jones, 2009), and the outcomes of elderly people using computer and the internet could be classified into personal and social development (Ng, 2008). Many studies focus on the psychosocial and psychological effects of interactive computer and internet use (White, et al., 2002; Adams, Stubbs, & Woods, 2005), as well as on the general impact of computer, internet and e-mail use on the social and emotional well-being of elderly people (Slegers, van Boxtel, & Jolles, 2008; Koopman-Boyden & Reid, 2009). Researchers identified many positive effects or benefits of ICT use such as positive impact on elderly people's mental activity and mental health stimulation (Nycyk & Redsell, 2006), additionally elderly who use ICT feel much more confident and less isolated (Danowski & Sacks, 1980; Kim, 2008), experience increased social support and social interaction (Cody, Dunn, Hoppin, & Wendt, 1999), feel more comfortable with computers (Czaja, Guerrier, Nair, & Landauer, 1993), have better cognitive abilities and independence in daily living activities and show a lower level of depression (McConatha, McConatha, & Dermigny, 1994). Above mentioned positive outcomes found in elderly people were later supported also by a study by Osman, Poulson, & Nicolle (2005).

In addition to the positive impacts of ICT use, there are also some barriers to the ICT use or of spending too much time in front of the computer. Elderly who spend too much time in front of the computer could suffer physical problems and consequently this could lead to repetitive stress injuries, neck-aches, backaches, and eyestrain (Richardson, Zorn, & Weaver, 2001). With excessive computer use, elderly people could withdraw into an artificial world, and playing games can make them place more emotional value on events within the virtual world than to things happening in their real lives, which may later result in emotional problems (Grabianowski, 2011). Additionally, elderly people can experience feelings of guilt, if devoting too much time to work with computers unless to their family (Richardson, Zorn, & Weaver, 2001). Computer use can also negatively affect elderly people's social relationships: the user can withdraw from friends and family with the purpose of spending more time on the computer, which can cause isolation (Grabianowski, 2011). What is more, late-night computer use cuts into much-needed sleep time, and the resulting long-term sleep deprivation causes difficulties in concentration, negatively affect job performance, drowsiness, and most of all a depression of the immune system (Grabianowski, 2011).

Many elderly people when entering the retirement period decide for a variety of hobbies which include travel (Transitions abroad, 2014), mostly because of the fact that before due to their family obligations, lack of finance, they were not able to do that; therefore they place travelling high in their personal priorities (Statts & Pierfelice, 2003). In the last few years there is a growing interest in studying tourism behavior of elderly people (Nimrod & Gurion, 2012), from studying descriptive characteristics of elderly people's tourist behavior (Hossain, Bailey, & Lubulwa, 2003), elderly people's motivations for travelling (Sellick, 2004), factors which influence decisions of elderly people whether they will travel or not (Bai, Jang, Cai, & O'Leary, 2001), associations between elderly people's retirement status and travel plans/activities (Blazey, 1992). There are also some studies on benefits of travelling, for example Weiss (2005) mentioned positive challenges for elderly such as deepening relationship with spouses, meeting new people, situations, experiencing foreign food, local traditions etc.

Nowadays almost all travel agencies operate online; therefore their services are much cheaper, easily accessible, and quicker (Aldridge, Forcht, & Pierson, 1997; Cheyne, Downes, & Legg, 2012; Lang, 2000). It is the fact that elderly people are still quite ignorant about information and communication technologies (ICT) use; nevertheless it has been proven that ICT can enrich elderly people's lives in various ways (Carpenter & Buday, 2007; Fokkema & Knipscheer, 2007; Sum, Mathews, Hughes, & Campbell, 2008). Additionally, there are more and more cheap air-tickets providers, which are also available mostly online;



therefore we have to raise a question, if the fact that there is a growing number of airlines and travel providers which are available also or only via Internet is a barrier for elderly people.

In this paper, we discuss potentials for elderly people in the case of purchasing flight tickets and in arranging travel activities online, in particularly we are interested in studying factors which affect tourist behaviour and experiences of elderly people, and how computer use impacts online behavior of elderly people.

## RESEARCH QUESTIONS

The objective of this single point study among elderly people in Slovenia is to present potentials for elderly people in the case of purchasing flight tickets and in arranging travel activities online. In particular, we were interested in addressing the following two questions:

1. Which factors affect tourist behaviour and experiences of elderly people?
2. To what extent frequency of computer use impact online tourist behavior of elderly people?

Answering these research questions could help understand elderly people's wishes and needs in conjunction with their tourist behaviour and experiences and on the other hand can provide useful information for designers of online tourist web services to create more user friendly web environments suitable and attractive to elderly people.

## MATERIALS AND METHODS

The single point research study was performed in Slovenia. The mean age of the participants in the first study was 60.5 years (SD=7 years; Min=53.5 years; Max=67.5 years). Prior to the study, the elderly were informed that participation in the study is voluntary and they could opt-out at any time and that the results of the research would only be used for research purposes.

The purpose of this study was to analyze which factors affect tourist behaviour and experiences of elderly people and to what extent frequency of computer use impacts online behavior of elderly people. The research questionnaire included 56 questions. The questions were both open-ended and closed-ended and partially closed and open-ended. Before being administered, the questionnaire was validated by two experienced older ICT users who gave feedback, so that some questions were eliminated and some re-written so as to be clearer.

All data were collected online and the first author has the only one access to the results. The data were analyzed by using the IBM SPSS Statistics 22 software to perform descriptive statistics: frequencies, mean values, Chi-square tests, and correspondence analyses.

## RESULTS

In the research study the majority of the participants were female (55.6% female, 44.4% male), who were mostly higher educated (29.5% 2-year college degree; 11.1% 3-year college degree; 16.7% 4-year college degree; 5.6% master and doctoral degree), 22.2% of older people finished high school and 9.3% vocational school. The majority of elderly people live in town (61.1%), while 38.9% live on countryside. 59.3% of elderly people live with partner, 22.2% live alone and 11.1% with children. Some elderly people expressed that they live alone, however occasionally also with their children. Only one person lives with his/her friend. In the majority elderly people live in their own house (61.1%), apartment (35.2%), and in minority elderly people live in elderly home (1.9%). The study showed that almost all elderly people live independently (96.3%). When asking elderly about the frequency of daily computer use the results showed that elderly people use computer very often (42.6%), and some less often (14.8%). Interestingly, those elderly who live with partner use computer more often compared to those who live alone. We were able to confirm statistically significant difference in elderly people's daily use of computer and living environment ( $p=0.05$ ), meaning that those living in town use computer more often compared to those living on countryside.

## FACTORS AFFECTING TOURIST BEHAVIOR OF ELDERLY PEOPLE

In this single point research study we were able to prove statistically significant difference between living arrangement of elderly people i.e. living alone, with partner, children and friend in relation to purchasing or not purchasing flight ticket online ( $p=0.001$ ). Additionally, we were able to prove statistically significant difference between living arrangement of elderly people i.e. living alone, with partner, children and friend and preparedness of elderly people in organizing travel activities online ( $p=0.004$ ). Those elderly who live with children in 33% expressed that they are not sure if they would purchase flight ticket online, however the other elderly who live alone or with partner would in 97% purchase flight ticket online. Elderly people who live alone would in 25% purchase flight ticket online. Regarding arranging travel activities online, elderly people who live with partner would perform this particular activity in 97%, those living alone would arrange travel activities online in 66% (25% of elderly people would not decide to perform this activities and 8% of elderly don't know if they would perform those activities online). Elderly people living with children would in 66% decide to arrange travel activities online; however 33% of elderly people are undecided.

Interestingly, we were not able to prove statistical difference in purchasing flight tickets according to gender ( $p=0.279$ ) nor the level of education ( $p=0.230$ ). Additionally, we were not able to prove statistical difference in arranging travel activities online according to gender ( $p=0.897$ ) nor according to the level of education ( $p=0.203$ ).

Within the study we were interested if the place of living (house, apartment or home for elderly) effect the tourist behavior of elderly people and we were able to prove the statistical difference in purchasing flight ticket ( $p=0.022$ ) and in arranging travel activities online ( $p=0.002$ ) according to place of living. More or less elderly people who participated in the study live independently and do not need help from other people or institutions, but we were still able to prove statistical difference in purchasing flight ticket ( $p<0.00$ ) and in arranging travel activities online ( $p<0.00$ ) according to living independently/partly dependently/dependently.

Overall, the findings associated with the first research question imply that nevertheless that elderly people do not have many ICT and Internet experiences, they are still prepared to try new things and do not feel fear which would discourage them to purchase flight tickets or organize travel activities online.

Multiple correspondence analysis (MCA) is used, among others, to graphically present categorical data (cases and categories), so that objects within the same category are close together and objects in different categories are far apart, dividing the objects into



homogeneous subgroups within categories. We performed the MCA on the variables “Age”, “Arrange travel activities”, “Education”, “Gender”, “Live in”, “Living environment” and “Purchasing flight tickets online”. The joint variable plot is shown in Figure 1.

After careful consideration we named the dimension X axis as age (more than 60 years on the positive side of the graph, and less than 60 on the negative) and the Y axis as Gender (males on the positive side of the axis and females on the negative). We see that both variables of interest are very similar (answers No, Don't know, Yes for both variables are close together), contrary to the categorical values of the answer which are far apart (Yes is on the other side of the graph as Don't know or No, as well as No is on the top of the graph and Don't know on the bottom), meaning that characteristics of the elderly people deciding for the online support for their travel arrangements are very different from those who don't or don't know. Regarding the dimensions younger elderly are more inclined to online support than older elderly, as well are higher educated and are living in town. A typical male deciding for online support has a two year degree or PhD, is less than 60 years old and lives in town and in apartment, and a typical female has a high school or MSc, is more than 60 years old and lives in own house.

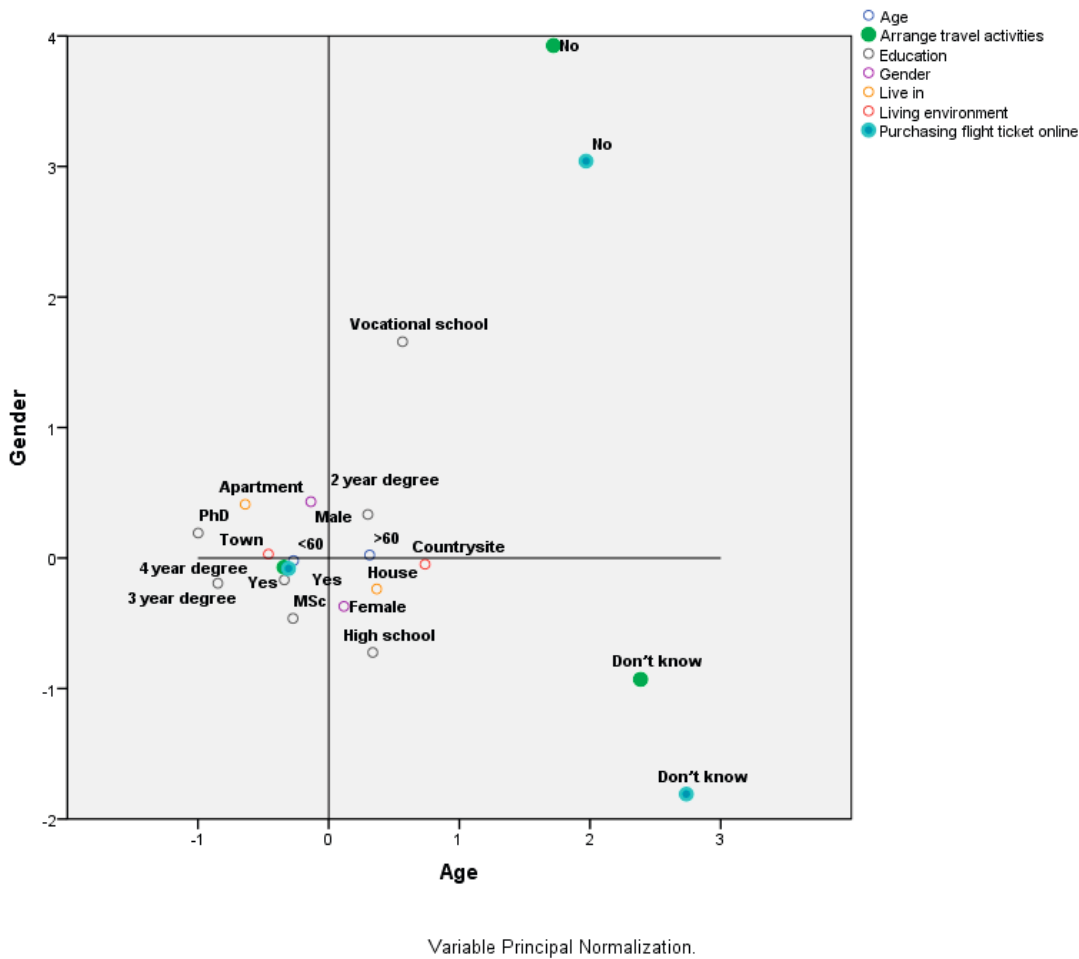


Figure 1: Biplot of various factors affecting tourist behaviour of elderly people

## CONNECTIONS BETWEEN FREQUENCIES OF COMPUTER USE, AND ONLINE BEHAVIOR OF ELDERLY PEOPLE

Results connected to the second research question showed that elderly people in majority very often use computers (2-3 or 4-repeatedly/day). When performing the analyzes Chi-square test by using variables purchasing flight ticket, arranging travel activities online and daily use of computer, we were able to prove statistical difference between purchasing flight ticket according to daily use of computer ( $p=0.011$ ). However we were not able to prove statistical difference between arranging travel activities online according to daily use of computer ( $p=0.120$ ). From the results it is clear that those elderly people who use computer often would all purchase flight tickets online.



## DISCUSSION

The results and the answer to both research questions show that the majority of potential elderly tourists don't have problems with online travel arrangements and flight ticket purchasing and thus are not hindered by the modern practice of cheap airlines to offer their services online. However there are still differences between various groups of elderly people especially concerning their living arrangements. One third of people living alone are not sure if they will purchase a ticket online or not, what might be attributed to the fact that they will probably leave this task to their children or maybe they are no more financially or physically independent (who will pay for the ticket?, they don't have a credit card, who will drive them to the airport?). Also the people who are living alone and are showing less intent to arrange their travel arrangement might face similar problems to those above, and additionally facing the problem that they might not have anyone to ask for advice about ICT use, or maybe they don't like to travel alone. Correspondence analysis also showed that there is also a large difference between an average male and female who are decisive to buy tickets online, possibly indicating that online elderly tourist behavior is a complex process requiring additional research and probably design of gender specific web environments and advertising campaigns.

## CONCLUSION

Despite many online tourist opportunities, many of them are still in lesser extend utilized by elderly people; therefore much energy should be directed into the motivation of elderly to learn and successfully use computers according to their practical needs as for example searching, buying, organizing tourist arrangement and flight tickets. According to the new knowledge gained from this particular study it is obvious that it is important to continue research, due to the fact that many questions are still open for research and discussion. Additionally, those kind of research studies are useful on one hand for elderly people to maintain a higher quality of life according to the possibilities and opportunities offered by leisure-travels and on the other hand also for software vendors and online web providers of tourism services to know how to maintain maximum quality of services, which will also be friendly to the elderly people.

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# Is Next 11 Next in Providing Evidence of Purchasing Power Parity?

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## *ABSTRACT*

Purchasing power parity (PPP) theory is based on exchange rates and price levels in an international environment, and its empirical studies deal with examination of real exchange rate movements in the long run. This paper investigates the validity of PPP for Next 11 economies (N11) with respect to US dollar. The N11 group includes Bangladesh, Egypt, Indonesia, Iran, Nigeria, Pakistan, Philippines, South Korea, Turkey, and Vietnam. Thus, we are examining a heterogeneous group of countries with common future foreseen by Goldman Sachs – becoming new world economic powers and overtaking the G20 by 2050. The analysis relies on real exchange rates data in the period of January 1995–December 2013 and uses a set of first generation panel unit root tests, which is based on the cross-sectional independency hypothesis. The validity of PPP theory could provide supporting evidence for progressive economic convergence of investigated group of economies to developed world. However, our results show no evidence in favour of PPP in the N11.

*Key words:* purchasing power parity, panel unit root tests, real exchange rates, N11.

## INTRODUCTION

Purchasing power parity theory states that a basket of goods should cost the same in two countries when the value of the basket is expressed in the same currency. The relative version of purchasing power parity theory holds if the movements of relative prices of goods are offset by the movements of prices of currencies in two observed countries in the long run. The nominal exchange rates and prices of goods are the base for the calculation of real exchange rates. Consequently, the empirical studies of purchasing power parity deal with testing the real exchange rates. Taking into account the relative version of the theory, the real exchange rates should follow a random walk in order to provide the appropriate movements of prices of goods and currencies in the observed period of time. A stationary time series of real exchange rate of a currency implies that the relative version of PPP theory should hold. Unit roots tests are generally used for testing the validity of PPP theory. There are numerous studies where time series are tested but lately the panels are used more often since it has been proved that the panel unit root tests are more powerful and provide better evidence for the presence of unit roots in individual time series (cross section) and a panel as a whole. A wide range of panel unit root tests exist. In general they are grouped into the first and the second generation panel unit root tests.

This paper provides a case of an application of a number of the first generation panel unit root tests for the case of N11 countries, including Bangladesh, Egypt, Indonesia, Iran, Nigeria, Pakistan, Philippines, South Korea, Turkey, and Vietnam. The concept of Next Eleven (N11) was introduced by Goldman Sachs in 2005 (Wilson and Stupnytska 2007) in order to determine a group of countries that could rival the G7 similarly as the BRICs. This heterogeneous group of countries has in common that they are “the next set of large-population countries beyond the BRICs” and has many differences, such as broad representation across major regions, huge variation in development levels, distinct levels of urbanization, openness to trade and the role of FDI, quite diverse population size, and market development and investor focus (Wilson and Stupnytska 2007). According to Goldman Sachs’ growth projections the N11 could catch up from one tenth of G7 GDP in 2007 to about two-thirds by 2050. However, three groups within N11 were identified: countries that could overtake the majority of G7 (Mexico and Indonesia), countries that could overtake some of the G7 (Nigeria, Korea, Turkey and Vietnam) and the rest (Phillipines, Iran, Egypt, Pakistan and Bangladesh) that are unlikely to overtake any of G7 members but it is possible to become very much alike to the smaller of G7 in terms of size.

The first tests of PPP were conducted on the cases of developed economies using time series data. Then, numerous cases of developing and emerging countries tested for PPP using time series data appeared, including individual members of N11, such as Alba and Park (2005), and Korap and Aslan (2010) for Turkey, Janjua and Ahmad (2006) for Pakistan and Bangladesh, Noman (2008) for India, Pakistan and Bangladesh, Kim and Jei (2013) for Korea. Lately, the existing empirical studies mostly investigate panels of developed countries, panels of Central European Countries and panels of South Asian Countries. According to our knowledge, there is no empirical study where a panel of N11 countries would be tested for PPP.



## THE MODEL OF PPP AND THE DATA

The basic model of testing for relative PPP can be derived in the following form (Froot and Rogoff 1995):

$$e_t = \alpha_0 + \alpha_1 p_t + \alpha_2 p_t^* + \xi_t \quad (1),$$

where  $e_t$  stands for nominal exchange rates, defined as the price of foreign currency in the units of domestic currency;  $p_t$  denotes domestic price index and  $p_t^*$  foreign price index; while  $\xi_t$  stands for the error term showing deviations from PPP. All the variables are given in logarithmic form. The strict version of PPP contains two types of restrictions imposed on the parameters. Under  $\alpha_0=0$ , the symmetry restriction applies such that  $\alpha_1$  and  $\alpha_2$  are equal in absolute terms, whereas the limitation of  $\alpha_1$  and  $\alpha_2$  being equal to 1 and -1, respectively, is called the proportionality restriction.

The empirical analysis of PPP investigates the characteristics of real exchange rates (strict version of Equation 1). Following relative PPP, the movements in nominal exchange rates are expected to compensate for price level shifts. Thus, real exchange rates should be constant over the long-run and their time series should be stationary in order to confirm the validity of PPP (Parikh and Wakerly 2000).

The real exchange rates are a function of nominal exchange rates and relative price indices in two observed economies. They are calculated from the nominal exchange rates using the consumer price indices:

$$re_t = e_t + p_t^* - p_t \quad (2),$$

where  $re_t$  stands for the logarithm of real exchange rate,  $e_t$  is the logarithm of nominal exchange rate, while  $p_t^*$  and  $p_t$  represent the logarithms of foreign price index and the domestic price index, respectively.

The study of unit roots has played an increasingly important role in empirical analysis of panel data. The investigation of integrated series in panel data has known a great development and panel unit root tests have been applied to various fields of economics: analysis of the PPP hypothesis, growth and convergence issues, saving and investment dynamics, international R&D spillovers. The use of panel data approach by unit root analysis has the advantage of increased test power over that of single equation tests.

The model takes into account the following AR(1) process for panel data:

$$y_{i,t} = \rho_i y_{i,t-1} + X_{i,t} \delta_i + \varepsilon_{i,t} \quad (3),$$

where  $i$  represents  $N$  cross-section units observed over periods  $t=1, 2, \dots, T_i$ ,  $X_{i,t}$  are exogenous variables in the model (any fixed effects or individual trends),  $\rho_i$  are autoregressive coefficients, while errors ( $\varepsilon_{i,t}$ ) are assumed as mutually independent idiosyncratic disturbance. If absolute value of autoregressive coefficients is less than 1,  $y_i$  is said to be weakly stationary. If the absolute value of autoregressive coefficients is 1,  $y_i$  contains a unit root.

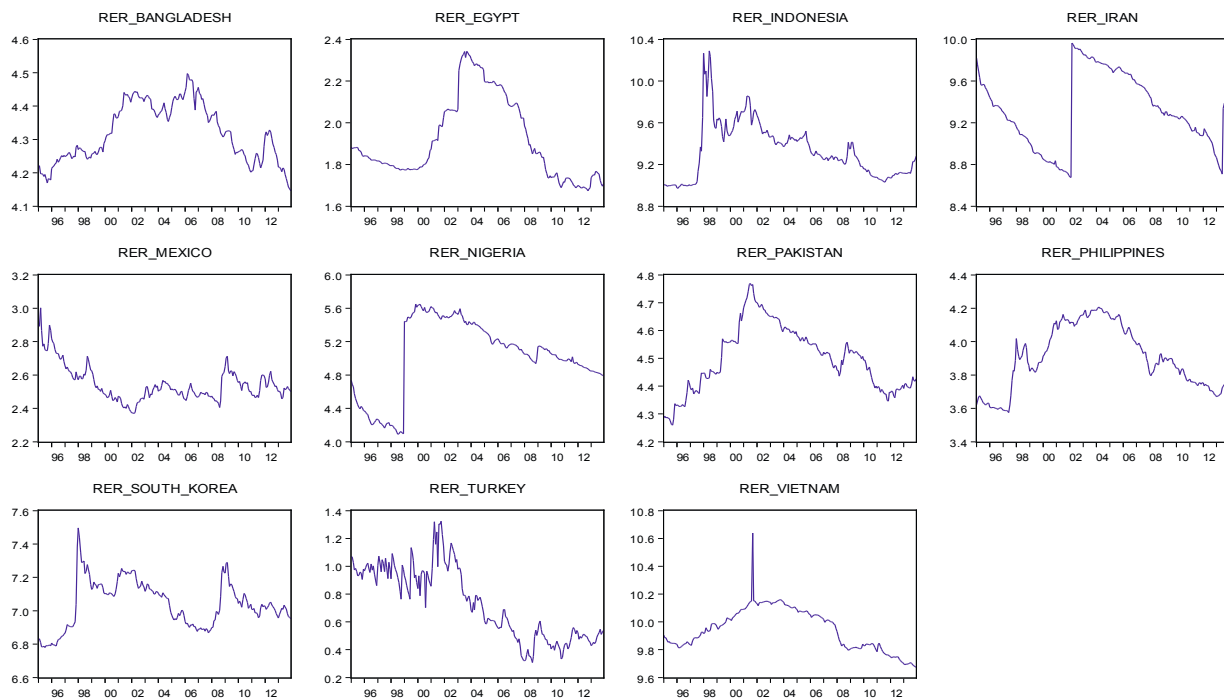
There are two assumptions about the autoregressive coefficients in panel unit root tests: (1) persistence parameters are common across cross-sections ( $\rho_i = \rho$ ) for all  $i$ , and (2)  $\rho_i$  vary across cross-sections. Among tests with common unit root processes we employed Levin, Lin and Chu (2002) test, while Im, Pesaran and Shin (2003), Fisher ADF and Fisher PP (Madala and Wu 1999, and Choi 2001) tests assume individual unit root processes.

The database covers monthly data covering the period of January 1995–December 2013 for the N11 countries: Bangladesh, Egypt, Indonesia, Iran, Nigeria, Pakistan, Philippines, South Korea, Turkey, and Vietnam. Primary data included monthly averages of nominal exchange rates and consumer price indices gathered from the IMF International Financial Statistics with exception of exchange rate for Pakistan from May 1995 to July 1997, for which the source was the State Bank of Pakistan due to missing data



in IMF database. Each of the exchange rates has been defined as the number of units of domestic currency for the US dollar. Consumer price indices used in this study for all countries refer to 2010. Figure 1 shows a heterogeneous fluctuation of real exchange rates within the group of N11. However, during the second half of the observed period almost all exchange rates experienced real appreciation.

*Figure 1: Real exchange rates in N11 (January 1995-December 2013)*



# THE FIRST GENERATION UNIT ROOT TESTS AND THE RESULTS

## LEVIN, LIN AND CHU TEST

Levin, Lin and Chu (2002) test is based on ADF specification:

$$\Delta y_{i,t} = \alpha y_{i,t-1} + \sum_{j=1}^{p_i} \beta_{i,j} \Delta y_{i,t-j} + X'_{i,t} \delta + \varepsilon_{i,t} \tag{4}$$

where a common  $\alpha = \rho - 1$  is assumed, while the lag order for difference terms ( $p_i$ ) varies across cross-sections. Under the null hypothesis ( $H_0: \alpha = 0$ ), there is a unit root. Under the alternative hypothesis ( $H_1: \alpha < 0$ ), there is no unit root. Levin, Lin and Chu (2002) first estimate auxiliary regressions of  $\Delta y_{i,t}$  and  $y_{i,t}$  on lagged terms  $\Delta y_{i,t-j}$  and on exogenous variables  $X_{i,t}$ . Residuals (denoted by  $\sim$ ) are used as proxies for  $\Delta y_{i,t}$  and  $y_{i,t}$ . In the next step,  $\alpha$  is estimated from the pooled equation:

$$\Delta \tilde{y}_{i,t} = \alpha \tilde{y}_{i,t-1} + \eta_{i,t} \tag{5}$$

Since the standard t-statistic for testing the hypothesis  $\hat{\alpha} = 0$  diverges to negative infinity, Levin, Lin and Chu (2002) derive the modified t statistics ( $t^*$ ) and show that it is asymptotically normally distributed.  $t^*$ -statistic is of the form

$$t^* = \frac{1}{\sigma^*} \left( t - NT \cdot \hat{S}_N \hat{\sigma}^{-2} \hat{\sigma}_\alpha \mu^* \right) \tag{6}$$

where  $\mu^*$  and  $\sigma^*$  are adjustment terms for the mean and standard deviation determined in a simulation study of Levin, Lin and Chu (2002),  $\hat{\sigma}_\alpha$  is the standard error of  $\hat{\alpha}$ ,  $\hat{\sigma}^2$  is the estimated variance of the residuals from equation (5) and  $\hat{S}_N$  denotes the average of individual ratios of long-run to short-run standard deviations.  $\hat{S}_N$  is estimated with kernel-based techniques. Following Hurlin (2010), we used quadratic spectral kernel in addition to the Bartlett kernel proposed by Levin, Lin and Chu (2002), and also considered regression (4) augmented with individual linear deterministic trends to check the robustness of results.

Table 1: Results of Levin, Lin and Chu test

Reference currency	Bartlett kernel		Quadratic spectral kernel	
	Individual effects	Individual effects and individual linear trends	Individual effects	Individual effects and individual linear trends
	$t^*$ (p-value) [no. of lags]	$t^*$ (p-value) [no. of lags]	$t^*$ (p-value) [no. of lags]	$t^*$ (p-value) [no. of lags]
USD	-0.60657 (0.2721) [0-2]	-1.15885 (0.1233) [0-2]	-0.63065 (0.2641) [0-2]	-0.94979 (0.1711) [0-2]

Notes: The number of lags in each cross-section ADF regression ( $p_i$ ) was selected by the Schwarz information criterion using a maximum of 12 lags. Computation was conducted with Newey-West bandwidth selection procedure.



Results of Levin, Lin and Chu test are presented in Table 1. The null cannot be rejected and we cannot confirm the PPP theory in the panel of N11. The results are the same regardless of specification of equation (4), namely in the case of individual effects and in the case of individual effects and individual linear deterministic trends the null of the unit root cannot be rejected for both spectral kernel estimators.

## IM, PESARAN AND SHIN TEST

Im, Pesaran and Shin (2003) base their test on the assumption of individual unit root processes and they estimate individual ADF regression for each cross-section:

$$\Delta y_{i,t} = \alpha y_{i,t-1} + \sum_{j=1}^{p_i} \beta_{i,j} \Delta y_{i,t-j} + X'_{i,t} \delta + \varepsilon_{i,t} \quad (7),$$

where the null hypothesis is

$$H_0 : \alpha_i = 0, \text{ for all } i \quad (8),$$

while the alternative hypothesis is defined as:

$$H_1 : \begin{cases} \alpha_i = 0 & \text{for } i = 1, 2, \dots, N_1 \\ \alpha_i < 0 & \text{for } i = N_1 + 1, \dots, N \end{cases} \quad (9).$$

Let  $\bar{t}$  denote the average of the t-statistics for  $\alpha_i$  from individual ADF regressions, i.e.

$$\bar{t} = \frac{1}{N} \sum_{i=1}^N t_i \quad (10).$$

Im, Pesaran and Shin (2003) adjust (standardize) the  $\bar{t}$ -statistic and prove that the adjusted statistic  $\bar{W}$  is asymptotically normally distributed.

Table 2 presents results of Im, Pesaran and Shin test. The null hypothesis for the panel cannot be rejected, proving that the countries (cross-sections) in our sample have unit root in real exchange rates and providing no evidence in favour of the PPP theory. The results are robust with regard to the inclusion of the deterministic linear trends in auxiliary regression (7).





Table 2: Results of Im, Pesaran and Shin test

Reference currency	Schwarz information criterion		Akaike information criterion	
	Individual effects	Individual effects and individual linear trends	Individual effects	Individual effects and individual linear trends
	W-stat (p-value) [no. of lags]	W-stat (p-value) [no. of lags]	W-stat (p-value) [no. of lags]	W-stat (p-value) [no. of lags]
USD	-1.03955 (0.1493) [0-2]	0.26413 (0.6042) [0-2]	-0.80795 (0.2096) [0-8]	0.93249 (0.8245) [0-8]

Notes: Maximum lag length was set to 12.

### FISHER ADF AND FISHER PP TESTS

Maddala and Wu (1999) and Choi (2001) use Fisher’s (1932) results to derive tests that combine individual p-values. Let  $\pi_i$  denote the p-value from separate unit root test for cross-section  $i$ . For continuous statistics the corresponding p-values are uniform  $[0, 1]$  variables (Hurlin 2010). Maddala and Wu (1999) define their statistic as

$$\chi^2 = -2 \sum_{i=1}^N \log(\pi_i) \tag{11}$$

and show that it has an asymptotic  $\chi^2$ -distribution with  $2N$  degrees of freedom. Choi (2001) proposes a similar statistic of the form

$$Z = - \frac{\sum_{i=1}^N \log(\pi_i) + N}{\sqrt{N}} \tag{12}.$$

Under the null hypothesis, Z-statistic converges to a standard normal distribution. The null and alternative hypotheses are the same as for the Im, Pesaran and Shin test described with equations 8 and 9. Table 3 presents  $\chi^2$  and Z statistics based on ADF (augmented Dickey-Fuller) test, whereas Table 4 shows results with PP (Phillips-Perron) individual unit root tests.

Again, the results in Table 3 and Table 4 imply that the null hypothesis of unit root cannot be rejected for the panel of N11. Therefore, the Fisher ADF and PP tests provide no evidence for validity of PPP in the group of observed economies. The choice of individual unit root test and the choice of the lag length selection criterion have no effect on the results. Additionally, allowing for deterministic linear trends does not influence the conclusions.



Table 3: Results of Fisher ADF tests

Maddala and Wu $\chi^2$ statistic				
Reference currency	Schwarz information criterion		Akaike information criterion	
	Individual effects	Individual effects and individual linear trends	Individual effects	Individual effects and individual linear trends
	$\chi^2$ (p-value) [no. of lags]	$\chi^2$ (p-value) [no. of lags]	$\chi^2$ (p-value) [no. of lags]	$\chi^2$ (p-value) [no. of lags]
USD	29.8368 (0.1225) [0-2]	26.8918 (0.2154) [0-2]	26.9479 (0.2132) [0-8]	17.5619 (0.7316) [0-8]
Choi Z statistic				
Reference currency	Schwarz information criterion		Akaike information criterion	
	Individual effects	Individual effects and individual linear trends	Individual effects	Individual effects and individual linear trends
	Z (p-value) [no. of lags]	Z (p-value) [no. of lags]	Z (p-value) [no. of lags]	Z (p-value) [no. of lags]
USD	-1.04356 (0.1483) [0-2]	0.36685 (0.6431) [0-2]	-0.73350 (0.2316) [0-8]	1.07278 (0.8583) [0-8]

Notes: Maximum lag length was set to 12.

Table 4: Results of Fisher PP tests

Maddala and Wu $\chi^2$ statistic				
Reference currency	Bartlett kernel		Quadratic spectral kernel	
	Individual effects	Individual effects and individual linear trends	Individual effects	Individual effects and individual linear trends
	$\chi^2$ (p-value)	$\chi^2$ (p-value)	$\chi^2$ (p-value)	$\chi^2$ (p-value)
USD	28.3284 (0.1651)	18.6302 (0.6680)	28.5566 (0.1580)	18.4414 (0.6795)
Choi Z statistic				
Reference currency	Bartlett kernel		Quadratic spectral kernel	
	Individual effects	Individual effects and individual linear trends	Individual effects	Individual effects and individual linear trends
	Z (p-value)	Z (p-value)	Z (p-value)	Z (p-value)
USD	-1.06110 (0.1443)	0.89168 (0.8137)	-1.02246 (0.1533)	0.85936 (0.8049)

Notes: Computation was conducted with Newey-West bandwidth selection.



## CONCLUSION

Since the N11 group is supposed to overtake some or even all of G7 countries in the future, it is interesting to check for various views of economic convergence. If PPP theory was confirmed, the convergence of prices of goods and exchange rates is taking place and would eventually become similar to those in the developed world. However, the first generation panel unit root tests (the Levin, Lin and Chu test, the Im, Pesaran and Shin test, the Fischer ADF test, and the Fischer PP) do not provide any evidence of PPP in the group of N11 countries as a whole, showing no convergence to the developed countries regarding the price levels and exchange rates in the observed time period. Other techniques had found some evidence in favour of PPP in individual N11 members: Korap and Aslan (2010), and Alba and Park (2005) for Turkey, Janjua and Ahmad (2006) for Pakistan, and Kim and Jei (2013) for Korea. There are numerous empirical studies of PPP exploiting panel data for various groups of countries but this research is the first to test the N11 as a panel, adding a new aspect in the research field of PPP. In order to look for better evidence in the panel of N11 as a whole, the second generation panel unit root tests and/or non-linear unit root tests of real exchange rates could be an alternative approach in further research of PPP in N11.



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# Environmentally Conscious Food Consumer Clusters in Hungary

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## *ABSTRACT*

The relationship between the economy, society and the environment, as well as the interactions between them are highly complex. The protection of the environment, the prevention of damage and the destruction of nature are key issues for the future of mankind. The protection of the environment in the modern world and especially in developed countries must be carried out effectively under the conditions of market economies, due to their economic power and level of consumption. In the globalized world the consumer societies have a significant impact on the environment, consumers' decisions and their consumption behaviours harmfully affect all parts of the ecosystems. We believe – according to several researches – that environmental protection, healthy diet, quality assurance of food, and consumer protection are attracting more and more individuals, and increasingly get publicity. The ecological consumer protection role is permanently growing globally, as well as in Hungary, with targeting that conscious consumption will play important role in consumers' decisions and values.

Our complete research focused on the identification and characterization of environmentally and health conscious consumer groups, the new trends in food consumption.

In order to outline consumer's responsibilities and limits, we begun multistep data acquisition in 2008, and we made a survey in 2013.

We wish to present the result of the latest series of our research: consumer segments revealed by cluster analysis and consumer groups by their environmental consciousness. We detected 5 clusters from Dark green to Potentially green with the K-means method.

In our study we present the main features and future potentials in these consumer clusters in terms of environmental consciousness - motivations of consumers to protect natural environment when purchasing foodstuff.

*Keywords: consumer behaviour, environmental consciousness, environmental protection*

## INTRODUCTION

Environmental awareness was first investigated by two environmental psychologists Michael P. Maloney and Michael P. Ward, they came to the consequence (1973) that some individuals are not insensate concerning their natural environment, and feel uncomfortable about its future - they indicated unfortunately it is not general. In spite of that they may agree with the necessity of environmental protection, their behaviour cannot be qualified as environmentally conscious at all (Maloney and Ward, 1973). Environmental care interpreted in various ways, as it is a complicated and doubtful concept (Chan and Lau, 2004). According to Crosby et al. (1981) it means a strong attitude for protecting the environment.

Environmental consciousness explained on several levels: global, national, organizational and individual (Schäfferné Dudás, 2008).

### GLOBAL LEVEL

The accelerating of industrialization in the second half of the 20th century was accompanied with the growth of ecological risks. The increase in production and development of applied technology did not only result in spectacular improvement but intensive use of raw materials and environmental destruction as well. The main reason behind this is growth. The population of the Earth is growing, and so does the pollution and industrial production of food as well, and they make this growth exponential (Meadows et al., 2004).

### NATIONAL/GOVERNMENTAL LEVEL

Environmental awareness of the public sector can show itself in performing its environmental protection related tasks on a high level.

### ORGANIZATIONAL LEVEL

This layer includes profit oriented business entities, non-profit civil organizations as well as academic organizations and the degree of their role in environmental protection.

### CONSUMER LEVEL

Our research examines consumers' health and environmental awareness, so we would like to give a more detailed description of this level.

From the 1980's there are a growing number of customers who appreciate environmental efforts of companies and reject companies that engage in activities harmful to the environment (Menon and Menon, 1997). According to Meffert and Kirchgeorg (1993) consumer consciousness is none other than (these three factors were studied during our research)



- The implementation of ecological consistency concerning shopping habits and decisions;
- The awareness that the product's development, production, distribution, consumption, use and even the following period has disadvantageous impact on the environment and causes additional costs.
- Efforts aiming the minimization of adverse effects and additional costs.

Meffert and Kirchgeorg (1993) indicated the following environmentally conscious consumer types: (1) reducing the consumption of traditional products (2) adjusting demand – purchasing eco-friendly products instead of traditional goods (3) consuming environmentally efficient products (4) participation in recycling as they collect waste separately (5) making environmentally conscious protests and complaints.

Ottman (1998) defines three segments of environmentally conscious consumers based on their environment-related efforts and activities:

The aim of the *Earth protectors* is the protection of wildlife and the restoration/preservation of the original state of the environment. They consider soil, air and water related problems crucial issues.

*Health fanatics* focus on the effect of environmental problems on health. They are afraid of sunlight-induced skin cancer, genetic disorders caused by radiation and toxic waste and the long term adverse effects of chemical content in plants.

*Animal protectors* boycott goods produced with animal use, they are the advocates of animal rights and protect endangered species. They are typically vegetarians and refuse to buy animal-tested products.

## MATERIALS AND METHODS

A questionnaire was delivered in April 2013 in Budapest for 2400 consumers of which 2000 was suitable for evaluation hence this was the size of sample. Our objective - when creating the samples - was the representativeness and quota based. The sampling with quotas aimed to provide representativeness by gender, age (adult consumers – above 18) and type of residence. Data survey was made by home using standard questionnaire and personnel interviews. We analysed the data gained by the mathematical and statistical software: SPSS Statistic 17.0, using one and multiple variables, with statistical validity at the 95% confidence level +/- 2%. Scale type of questions were analysed by using average and percentage computations as well as cross-tabulations.

It was a *factor analysis* performed first, concerning the research as a whole, as well as regarding the two main areas of our research separately. We have chosen this technic as factor analysis is one of the best methods to discover and characterize the consumer groups. For total research data, it was twenty-two variables examined and managed to establish six factors. During the examination fifteen variables were analysed focussed on health consciousness, which resulted in four factors. While focusing on environmental consciousness, an opportunity has evolved to separate four factors as well, applying fifteen variables as in the previous case.

*Cluster analysis* can be applied very well for segmentation of the market and for analysing the market structure, which is main objective of our research. K-mean, a non-hierarchical method was chosen since the hierarchical analysis cannot be applied in case of a high number of sample elements. For this reason, one had to determine the cluster centres and the number of clusters to be created (Sajtos – Mitev, 2006).

Including the complete research material, six clusters were created as a result. During our research focusing on health consciousness, we have examined fifteen variables, resulting in five clusters. Brought into focus the environmental consciousness, we were able to separate five clusters as well, applying the same amount of fifteen variables. In our study, we would like to introduce the clusters and consumer groups which we examined regarding the aspect of environmental consciousness.

## RESULTS AND DISCUSSION

The standardized questionnaire contained twenty questions and three parts: food purchasing habits at first, then the level of consciousness during the food purchasing process, followed by a section of personal data.

The adult participants' number living in the capital was 2000, of which 1963 were added to the statistics during the cluster analysis. (The population of Budapest is approximately 1.7 million). The Gender division of the participants: male 45.8% female 54.2% - and their division based on residence: capital inner city districts 60.7% and the capital's outer districts 39.4% - Table 1 shows the distribution of sample age groups.

*Table 1: Distribution of samples per age groups*

Age groups (year)	Frequency (head)	Percent (%)
Youth(18-34)	607	30,4
Middle-aged (35-60)	1084	54,2
Ageing (60+)	309	15,5
Total	2000	100,0

Source: The authors (2013)

### *The results of factor analysis concerning environmentally conscious food purchase*

Focusing on environmental consciousness four factors could be distinguished based on fifteen variables. During analysis the Principal Component Analysis method and the Varimax rotation was applied. Significant and KMO index value of Bartlett's test reached over 0.8, which means that the factor analysis is suitable. (Table 2)

*Table 2: KMO and Bartlett's Test (n=1963)*

Kaiser – Meyer – Olkin Measure of Sampling Adequacy		.837
Bartlett's Test of Sphericity	Approx. Chi-Square	6352.233
	df	105
	Sig.	.000

Source: The authors (2013)





**Table 3: Rotated Component Matrix (n=1963)**

Rotated Component Matrix <sup>a</sup>				
	Component			
	1	2	3	4
Paying attention to green emblems	.815	,041	,064	-,102
Preference of recyclable packaging	.795	,045	,069	,012
Environmentally friendly behavior	.726	,164	,073	-,104
Frequency of organic food purchase	.676	,061	-,038	-,268
Preference of returnable packaging	.596	,021	,198	,268
Purchase of products from nearby manufacturer	.548	,101	,122	,034
Pre-planned grocery shopping	.022	,756	,191	-,003
Frequency of the usage of shopping lists	.084	,682	,042	-,010
The rate of informedness concerning food	.284	,631	-,081	-,006
The role of efficiency	-,016	,583	,380	,259
Avoidance of unnecessary purchases	.010	,181	,729	,143
Preference of fresh food	.170	,099	,615	-,297
Avoidance of over packaged food	.420	-,011	,589	,040
Degree of routine in food shopping	.035	-,020	-,104	,802
Price sensitivity	-,263	,299	,275	,488

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

Source: The authors (2013)

Names of factors are results of a very subjective decision-making process. During the process variables with the higher factor loadings have to be emphasized:

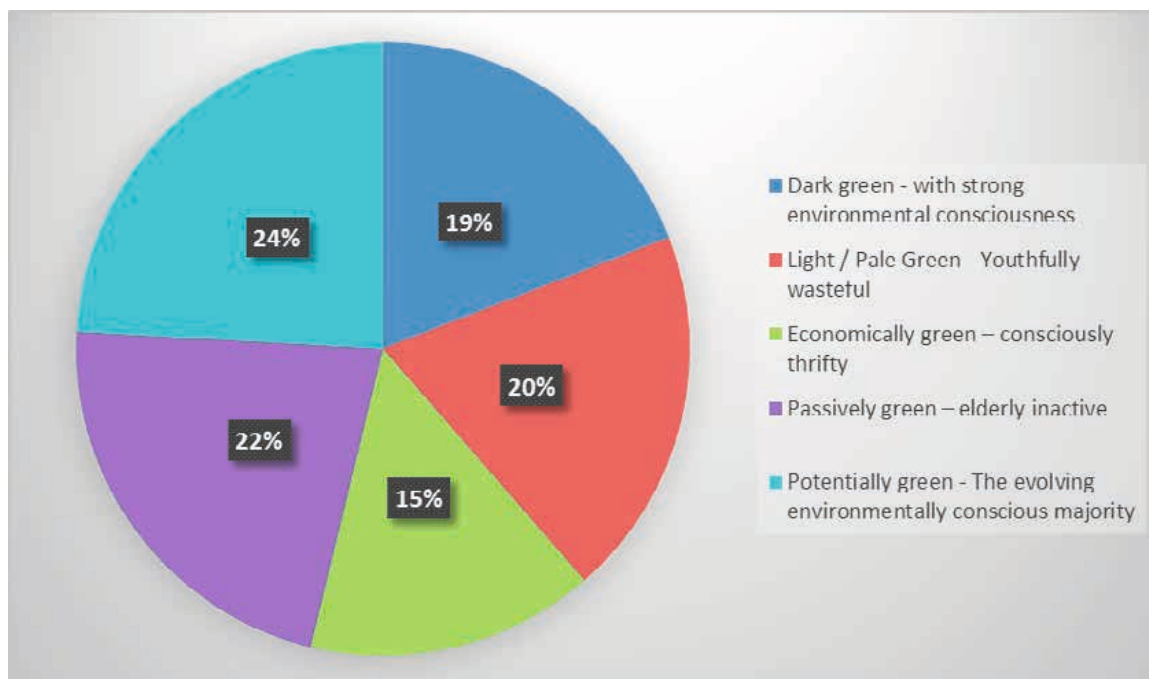
1. Strong environmental orientation factor
2. Planned and economical factor
3. Optimal amount and fresh product factor
4. Conservative – price sensitive factor

#### ***Clusters from the aspect of environmentally conscious food purchase***

Variables and properties have been examined on a scale of 1-5. Value 1 is not true at all, while value 5 is completely true, concerning respondents. The mean of the answers can be seen in Table 4. In our research examining environmentally conscious food purchase, we were able to detect five clusters with the K-means method, considering fifteen variables. We would like to present these consumer groups briefly.

Graph 1 represents our clusters with partition coefficients of environmentally conscious food purchase according to our research result.

Graph 1: The 5 Clusters from the aspect of environmentally conscious food purchase



Source: The authors (2013)

#### Cluster 1 (19.1%): Dark green – with strong environmental consciousness

This cluster shows the highest proportion of women (64.5%), who are typically middle age (73% is between the ages 31 and 65). The average age concerning this group is 46. The group with the highest qualification divides the following way: 47.7% have a college degree, which means 10% more points than the average. Only a small proportion of this group consists of students (4.4%), while most of them are employees (54.5%) and the rate of entrepreneurs is also higher than average. This is the group of customers with highest income. Two thirds of them prefer to shop at super- and hypermarkets, but 17.3% of them also like to shop at traditional markets. (An average of 9.2%). Due to their high income, this group has the highest value of order details. Small households are typical, two adults (54%) and a maximum one (20%), or two (14%) child(ren). This customer group shows the best values concerning every variable examined. According to their own admission, they are the most conscious environmentally, they are strongly brand-loyal, they have the highest standards, they prefer domestic and nearby produced groceries; they mostly buy bio-products and they have the highest proportion in buying products with returnable packaging, they avoid over-packaged products and are more likely to buy fresh food.

For this group price of the products is of the least importance which is possible because of their high average income. They are highly informed and open-minded to innovations. This is the most environmentally conscious group, who are also highly health-oriented.

**Table 4: The mean of the variables of environmentally conscious clusters on a scale of 1-5 (n=1963)**

Cluster	Environmentally friendly behaviour	Paying attention to green emblems	Preference of recyclable packaging	Avoidance of over packaged food	Avoidance of unnecessary purchases	Preference of fresh food	Frequency of the usage of shopping lists
1	4,13	3,99	3,94	4,06	4,03	4,64	3,98
2	2,21	1,69	2,11	2,41	3,02	3,58	1,75
3	2,55	1,86	1,77	2,81	3,54	4,22	4,04
4	2,85	2,26	3,24	3,42	4,17	4,15	3,90
5	3,42	3,25	3,00	3,38	3,36	4,05	2,18
Total	3,06	2,66	2,87	3,24	3,63	4,12	3,10

Cluster	Preference of returnable packaging	Frequency of organic food purchase	Pre-planned grocery shopping	Degree of routine in food shopping	Price sensitivity	The rate of informedness concerning food	The role of efficiency	Purchase of products from nearby manufacturer
1	4,09	3,53	4,48	3,23	3,74	3,92	4,24	3,56
2	2,00	1,50	3,06	3,55	3,70	2,76	3,29	1,91
3	2,17	1,82	4,32	2,81	3,91	3,29	3,91	2,02
4	2,69	1,71	4,48	4,02	4,51	3,60	4,51	2,61
5	3,39	2,89	3,44	3,33	3,45	3,26	3,62	2,88
Total	2,91	2,32	3,93	3,43	3,86	3,37	3,92	2,63

Source: The authors (2013)

### **Cluster 2 (19.5%): Light / Pale Green - Youthfully wasteful**

The proportion of men is extremely high here (65.4%). It is the youngest cluster, more than half of the group (57.3%) is under the age of 45. Two or three adults form a household (68%) with typically one minor (18.3%). Due to their age, the proportion of students is the highest (16.6%) while every other member is an employee. Interestingly, both the number of members with the lowest (14.7%) and highest (31.5%) income is higher than the average. Two thirds of them likes to shop at super- and hypermarkets but the highest proportion prefer small shops (16.8%), they often buy small lots, since they are mostly students or single young adults with a higher income. They “avoid” traditional markets. They claim to be the least environmentally conscious. Concerning most of the variables we gained the weakest data regarding environmental consciousness. For example most of them don't prefer domestic products, they are the ones least looking for returnable packaging, they don't pay attention to environment friendly emblems. Neither do they avoid over packaged and unnecessarily purchased products. According to their own admission they are less loyal to brands and they don't seek information about the food they purchase. Efficiency and planned shopping is not their characteristic. Overall we can say that they don't feel the importance of their decisions regarding the environment due to their young age.

### **Cluster 3 (15.2%): Economically green – consciously thrifty**

This is an interesting group consisting of mostly women (62.8%) where the proportion of both the younger (ages between 18 and 35 years, 33.9%) and the older (17.4%) age group is higher, with an average age of 45 years. The highest proportion of the group (cca. 67%) lives in inner districts. They are mainly employees (55.8%), but many of them are pensioners (19.2%) The households are considered bigger: usually with 4-6 persons of which 1-2 are minors. The incomes are moderate, but since they live in bigger households, they prefer economical and sparing purchases and find environmentally friendly products very expensive. They are

the least loyal to brands, but they complete their shopping accordingly a previously prepared list and plan; economically and with a high price sensitivity. They show passivity towards returnable or recyclable packing or wrapping. Based on their answers, they can be characterized as moderately open and informed, having moderate standards.

#### **Cluster 4 (22.1%): Passively green – elderly inactive**

As to their gender the number of women is moderately higher (59.3%). Concerning the oldest cluster 41.2% of them are over 56 and their average age is 50. Therefore it is not surprising, that nearly 30% are retired and the proportion of single occupancy households (24, 3%). They have the lowest education level, which also explains their passivity regarding environmental protection and their lack of awareness. This group has the smallest number of entrepreneurs (9,7%) and their average income is also the lowest (due to low pensions in Hungary). Certainly most of them go to supermarkets and hypermarkets, but they also like small shops and markets. It is also not surprising that at these occasions they spend less on groceries than the average. This is a moderately eco-friendly and informed group, but they like domestic products. They are moderately concerned about recyclability, over packaging and eco-friendly emblems. However they prefer returnable packaging, presumably because the product is cheaper this way. They are not typically bio-product buyers, because that is more expensive. Due to their low income they shop economically, avoiding any excesses. They are the most price sensitive group, they mostly buy out of habit, and plan their shopping, they are not too loyal to brands, because they keep looking for the actual discounts. This group is the least open minded concerning new products.

#### **Cluster 5 (24.1%): Potentially green - The evolving environmentally conscious majority**

As to their gender, they show the proportion of the pattern, mostly middle-aged (55% consist of ages between 31 and 55) with the smallest headcount of elderly people (3,8%) and an average age of 42 years. Regarding their education, the proportion of members with college degree is surpassingly high (44.8% which is higher than the average with 6% points). This cluster includes a higher headcount of entrepreneurs (22.6%), thus the average income is the highest in this group. They almost only shop at super- and hypermarkets (84.8%). They can be described with households of 3-4 members of which 1-2 are children.

This is the second most environmentally conscious group (after the first cluster). They prefer domestic and bio-food, and are open to novelties. They pay attention to recyclable packaging and eco-friendly emblems. However shopping lists and the purchase of fresh products is not their characteristic. They buy a lot of unnecessary products, and don't avoid over packaging. The members of the cluster have high standards but only moderately informed about groceries. This group is the least price sensitive due to their high income.

## SUMMARY

Hereby we wanted to present a slight part of the results of our series of research, as we focused on environmentally aware food consumers. We defined five clusters of the environmental conscious adult population in Budapest, which shows that the people in the Hungarian capital still has to improve their behaviour concerning the natural environment.

We detected a strongly environmentally conscious consumer group in the first cluster with a positive impact on the natural environment and their children as well as the future generation, their number might advance along with the economic growth in Hungary. The increase of environmental consciousness along with economic development and the increase of social welfare can result in the strengthening of another element playing a dominant part in success – willingness to pay. In this group consumers



are more willing to pay for products and services which are environmentally more positive than for those which cause harm to the environment and can have negative effects.

In the second cluster we indicated the youngest and strongly wasteful generation, with the possibility to change their attitude by green communication and effective campaigns – as they are receptive and responsive, along with the potential to become environmentally friendly and the member of our first cluster.

The third cluster contains the economically green population with lower income young adults and elderly people. They protect the environment according to their income, as they save money when they make economical purchases not buying useless goods and not participating in mass consumerism. If their salary increases they might become more environmentally conscious and buy green product with a higher price, otherwise they keep their thrifty but passive environmental orientation.

We defined the passively greens in the fourth cluster as elderly inactive population with the lowest education level as well as the lowest average income. They are very passive as regards environmental protection, and due to their age, their routines, and the lack of open-mindedness they are unlikely to change their environmentally conscious behaviour.

We described a very high environmental potential in the fifth cluster of potentially greens as their behaviour could be easily improved. They are mostly middle aged, high educated with higher income, and with small children therefore they might be more open to eco-friendly solutions.

Our sample survey results now show improvement to our national research in 2008, which can be explained by higher education and a higher average income in the capital. Unfortunately Hungary's environmental awareness is below the West European level, because of primarily cultural and economic reasons. Following from the fact that the environmental consciousness and level of demand of the Hungarian population are arguably low, there is a minor influence from their side on the environmental measures taken.



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# Liquidity Issues in Times of Economic Crisis

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## *ABSTRACT*

In this paper we address the topic of liquidity issues in times of economic crisis. We analyse the liquidity effects as recorded on spreads of securities from different markets. We stipulate that higher international risk aversion in time of financial crisis coincides with widening security spreads. The paper then introduces liquidity as a risk factor into the standard value-at-risk framework, using GARCH methodology. The comparison of results of these models suggests, that the size of the tested markets does not have a strong effect on the models. That is why we find that spread analysis is a proper tool for analysing liquidity issues during financial crisis.

*Key words: liquidity, financial crisis, GARCH VaR models*



## INTRODUCTION

Traditionally, liquidity risk in financial crisis stemmed from the possibility of bank runs. One can find a number of these episodes. Strahan (2012) points out that more recently, liquidity risk has come less from deposit outflows and more from exposure to a range of lending and interbank financial arrangements. These include undrawn loan commitments, obligations to repurchase securitized assets, margin calls in the derivatives markets, and withdrawal of funds from wholesale short-term financing arrangements.

The global crisis brings forward concerns, that the lack of funding liquidity can have serious negative consequences, which can range from inability of firms to sell commercial papers to finance their business models, to inability of borrowers to obtain funding for home mortgages. Falling home and stock prices are then unavoidable effects. Unconventional measures have been introduced to mitigate this problem: the FED's decision to purchase unsecured 90-day commercial paper directly from corporations in late October 2008 and \$1,25 trillion home mortgage bond purchase program in 2010 are examples of solving balance sheet channel (Bernstein et al, 2011).

In searching for other important effects of changes in funding liquidity on financial markets Brunnermeier and Pederson (2009) explore the relationship between funding liquidity and market liquidity. Their analysis suggests that market liquidity is likely to be low when funding liquidity is low. The episodes of sub-prime mortgage crisis and global crisis are examples where funding constraints have played an important role in the onset and spread of financial crisis.

There is a disagreement among economists, whether global crisis was a liquidity crisis or a solvency crisis. We could also find ample evidence that liquidity risk is incorporated into asset prices what allows the possibility that illiquidity and insolvency aren't as distinct phenomena as we usually think (Viral, Pedersen 2004).

The idea that the crisis was a liquidity crisis is based on Diamond-Dybvig model of bank runs, where repo customers conducted a fire sale of repo securities, preventing banks from being able to borrow short term. The opposite argument states, that the reason bank's liquidity dried up was simply that the market realized that the banks were insolvent.

Mehrling (2013) warns about the risk of over-simplification, where we tend to think of the financial crisis as a credit crisis concentrated in the banking system when in fact the global crisis was a liquidity crisis that prompted in a solvency crisis on the dealer market. Far more important than bank-based lending system for global financial markets is market liquidity, which can be defined as the ability to buy or sell securities in large quantities with virtually no effect on the price.

In the run-up to the crisis, there were huge incentives to set up or expand shadow banks because interest rates were low and there was a growing flow of available assets. The problem was that riskier assets in the form of securitized subprime mortgages filtered into the system (Mehrling 2013). Forced sales provoked declining prices and at one point only Fed intervention prevented huge implications for the dealer funding market.

The global crisis of 2008 on developed momentum and transformed to euro area sovereign bond crisis. It is interesting that liquidity plays a minor role in bond yield determination until 2008, after the Lehman crisis and this role is quickly reduced after late 2009 (Bai et al, 2012). That is, during the early stage of the Euro sovereign crisis, the market is characterized by flight to liquidity, but the later stage, the credit risk is the main driver of bond yields and the market is characterized by flight to quality.

VAR analyses (Bai et al, 2012) also indicate that the Euro sovereign bond crisis is less a liquidity crisis but a crisis induced by common fundamentals. Imprudent fiscal policies (Greece) and lax regulation in the private sector like imprudent banking policies (Ireland and Slovenia), housing booms (Spain) and other fundamental factors provoked bad domestic macroeconomic behaviour. Liquidity crisis was an inevitable implication of such fundamental disequilibria.





## METHODOLOGY

As in our previous paper (Bricelj et al., 2013), we first describe the concept of liquidity. Jorion (2007) defines three different forms of liquidity. In the first form it is defined as the ability of a company to pay its debts. In the second form it is used to describe the characteristics of a portfolio (asset liquidity) or a market (market liquidity). In the third form it defines the state of an economy from the monetary perspective. The relevant form for our research is the second form, that is the definition of how readily available certain asset is for trade.

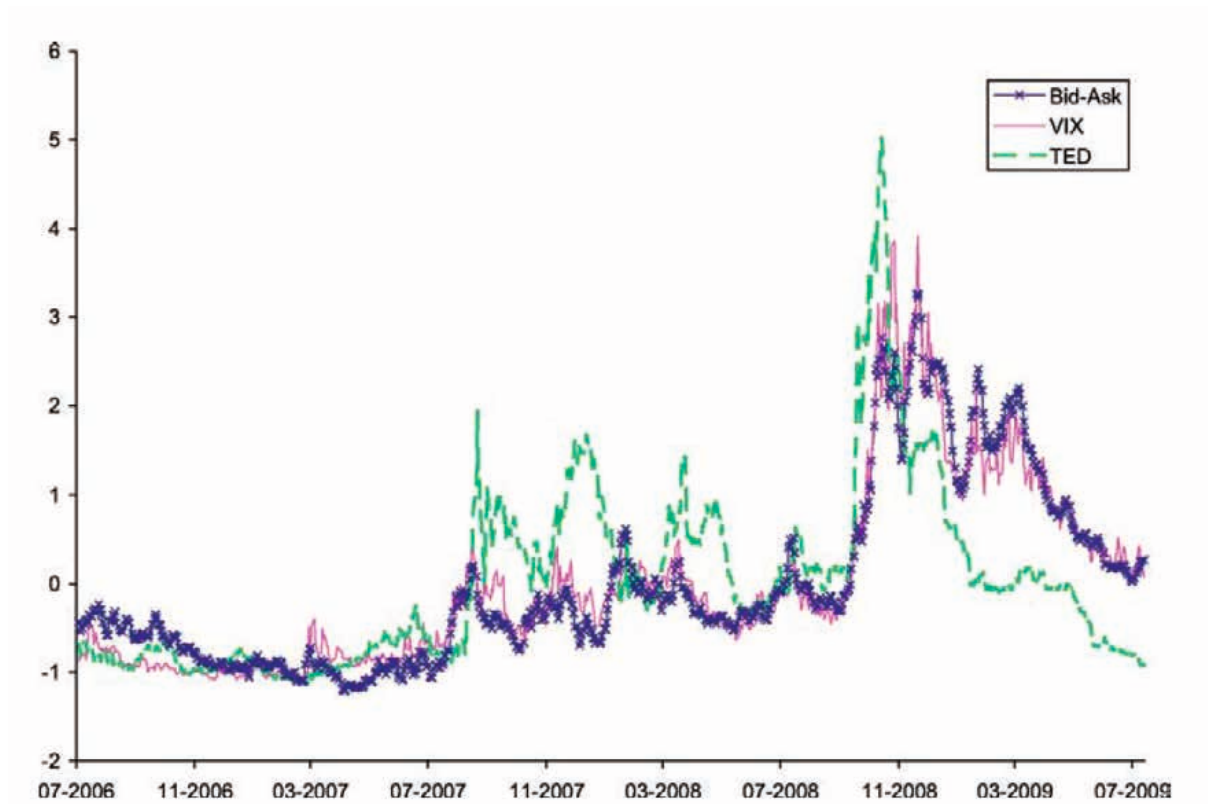
From the above discussion we can further define market liquidity as costs associated with trading an asset relative to its mid-price. On that concept Stange and Kaserer (2009) define possible degrees of liquidity of an asset as “fully liquid”, “continuously tradable”, “disruptively tradable” and “illiquid”.

This availability of data often defines the methodology used in the research. Because of that some models that incorporate liquidity risk are purely theoretical (Ernst et al., 2009). Among those are models based on optimal trading strategies. On the other hand authors classify applied models into three groups: models based in bid-ask-spread data, models based on transaction or volume and models based on weighted spread data.

Liquid markets tend to exhibit five characteristics: tightness, immediacy, depth, breadth and resiliency. Among them, tightness refers to low transactions costs, such as the difference between buy and sell prices, like the bid-ask spreads in quote-driven markets. There are several factors that contribute to the difference between the bid and ask prices: a security's liquidity, volatility, stock's price. The global liquidity crisis that started in 2007 could be explained through bid-ask spreads, as a measure for the evolution of market liquidity Pedersen (2009) hints on the close co-movement between bid-ask spreads and VIX throughout the crisis and also a visible connection to the TED spreads, indicating a link between market liquidity, funding and volatility.



Figure 1: Bid-Ask Spreads during the Global Liquidity Crisis



Note: The chart shows average bid-ask spread for large-cap U.S. stocks, the equity volatility index VIX, and the interest rate spread between LIBOR and Treasury bills (TED) from July 2006 to July 2009. Each of the series has been scaled to have a zero mean and a unit standard deviation.

Source: Pedersen (2009).

In our research we used data on relative spread. Our models were based on those documented in articles of Bangia et al. (1998, 1999) and upgraded according to Ernst et al. (2012) with the Cornish-Fisher expansion to estimate the quantiles of the distribution of spread and mid-price:

$$\tilde{z}_{\alpha} = z_{\alpha} + \frac{1}{6} (z_{\alpha}^2 - 1) \gamma + \frac{1}{24} (z_{\alpha}^3 - 3z_{\alpha}) \kappa - \frac{1}{36} (2z_{\alpha}^3 - 5z_{\alpha}) \gamma^2, \quad (1)$$

where  $\gamma$  and  $\kappa$  represent the skewness and kurtosis of a distribution. Considering the multiplicative effects of worst spread on mid-price returns, they propose the following LVAR model:

$$\text{LVAR} = 1 - e^{(\tilde{z}_{\alpha}(r) \sigma_r)} (1 - \frac{1}{2} (\mu_S + \tilde{z}_{\alpha}(S) \sigma_S)), \quad (2)$$

where  $\tilde{z}_{-\alpha}(r)$  represents the quantile of the distribution of returns and  $\tilde{z}_{-\alpha}(S)$  represents the quantile of the distribution of spread.

In our research we calculated the volatility of returns using GARCH (1, 1). We opted for this method because according to Engle (2001) and Bollerslev (2009) this type of GARCH models are often used in praxis. To calculate the dynamic variance we used the following econometric model:

$$\sigma_t^2 = \omega + \alpha_1 \varepsilon_{t-1}^2 + \beta_1 \sigma_{t-1}^2. \quad (3)$$

The crucial part of our research after the implementation of VaR and LVaR models was the testing for accuracy of those models. This is done using out-of-sample diagnostics, known as backtests. It can be assumed, that if a model does not pass those backtests that it is not sufficiently accurate but it must also be noted that the results of backtests vary depending of the characteristics of a portfolio (Alexander, 2008). Backtests are based on historical data with a fixed estimation period which defines the sample used to estimate the VaR model parameters.

## DATABASE AND RESULTS

Our database is comprised of four sets of securities, corresponding to stock exchanges on which they are traded: Slovenian dataset, German dataset, Korean dataset and American dataset. We summarize the characteristics of the chosen stock exchanges in the table 1.

*Table 1: General characteristics of the chosen stock exchanges in the year 2011*

	Deutsche-Boerse	Ljubljana Stock Exchange <sup>a</sup>	Korea Exchange	New York Stock Exchange
Market capitalization [US\$bn]	1185	6,316	996	11796
Number of listed companies	746	76	791	2308
Trade value [US\$bn]	1758	0,511	2029	18027

Notes: <sup>a</sup>Data for Slovenia are converted to USD using the closing exchange rate on 30.12.2011, EUR/USD = 1,29610.

Sources: <http://www.ljse.si>, <http://www.world-exchanges.org/>.

Table 1 shows clearly how much the capital markets differ from one another. Some of the biggest stock exchanges operate on the foreign capital markets and are a lot bigger than the Slovenian one.

In our research we included five assets from each of the four capital markets, i.e. five stocks from the Slovenian Prime Market Shares, five from DAX 30 Index, five from Dow Jones Industrial Average Index and five from the KOSPI Composite Index.



The data on assets consisted of price data (opening, closing maximum and minimum prices), volume data and spread data (best bid/ask prices from the limit order book). We obtained the data for Slovenian assets from Ljubljana Stock Exchange and the data for foreign assets from Bloomberg. The data covered the period from January 2000 to April 2012 on a daily frequency.

We present the data analysis in table 2. We based the analysis on mid-price logarithmic returns. The reason we chose the mid-price returns is because they are used in VaR and LVaR models as well as in most types of backtests we applied. In table 2  $n$  is the number of trading days,  $\mu$  is the mean of logarithmic returns, Max and Min are the maximum in minimum value of returns in the sample,  $\sigma$  is the standard deviation of returns,  $\gamma$  is the coefficient of skewness,  $\kappa$  is the coefficient of kurtosis and JB is the p-value of the Jarque-Bera test.

*Table 2: Data analysis of logarithmic mid-price returns*

Code	Description	n	$\mu$	Max	Min	$\sigma$	$\gamma$	$\kappa$	JB
GRVG	Gorenje, d.d.	3045	-0,00023	0,097	-0,094	0,016	-0,041	7,721	0,000
KRKG	Krka, d.d.	1122	-0,00078	0,084	-0,113	0,017	-0,380	8,863	0,000
LKPG	Luka Koper, d.d.	3045	-0,00014	0,108	-0,098	0,016	-0,104	8,044	0,000
MELR	Mercator, d.d.	3034	0,00021	0,110	-0,094	0,016	0,142	9,157	0,000
PETG	Petrol, d.d.	3047	0,00012	0,128	-0,106	0,015	0,277	13,501	0,000
BAYN.DE	Bayer AG	3102	0,00006	0,334	-0,189	0,022	0,803	25,922	0,000
BMW.DE	BMW AG	3087	0,00026	0,135	-0,126	0,022	0,055	6,623	0,000
DAI.DE	Daimler AG	3098	-0,00021	0,175	-0,143	0,023	0,175	8,059	0,000
TKA.DE	ThyssenKrupp AG	3086	-0,00018	0,165	-0,174	0,024	-0,108	7,205	0,000
SIE.DE	Siemens AG	3112	-0,00006	0,166	-0,165	0,024	-0,068	7,312	0,000
000120.KS	CJ korea express Co.	2714	0,00007	0,254	-0,627	0,039	-1,360	33,409	0,000
000210.KS	Daelim Industrial Co.	2862	0,00076	0,465	-0,274	0,038	0,440	13,747	0,000
000240.KS	Hankook Tire Co.	2877	0,00093	0,154	-0,141	0,031	0,254	4,833	0,000
000270.KS	Kia Motors Corp.	2837	0,00085	0,214	-0,296	0,032	-0,258	8,487	0,000
005930.KS	Samsung Electr. Co.	2925	0,00054	0,140	-0,146	0,026	0,029	6,689	0,000
BA	The Boeing Co.	2967	0,00019	0,180	-0,173	0,024	-0,039	8,613	0,000
HPQ	Hewlett-Packard Co.	2920	-0,00020	0,203	-0,285	0,031	-0,363	13,250	0,000
KO	The Coca-Cola Co.	2959	0,00008	0,100	-0,144	0,016	-0,116	9,164	0,000
PFE	Pfizer Inc.	2920	-0,00012	0,116	-0,161	0,020	-0,228	8,596	0,000
XOM	Exxon Mobil Corp.	2840	0,00027	0,172	-0,160	0,019	-0,046	12,794	0,000

Source: own calculations.

We chose the assets for our research in such a way that they best represented the economic landscape of a chosen economy and that they were diversified at the same time. We also tried to harmonize the choice of assets between the four capital markets. Two particular criteria were used in the choice of the final five. First, the data on the assets must cover a long enough period that encompasses times of economic upturn and downturn. Second, the data must not contain bigger anomalies, such as stock splits or longer periods of no trading activity. In one case (KRKG) there was a stock split in September 2007. We chose to incorporate into our research only the data after the split, reason for this being that other not chosen Slovenian stocks were far less traded and therefore presumed far less liquid than the one with the anomaly.



After we obtained the data we analysed it and corrected smaller anomalies than those discussed above. From the data on Slovenian stocks we omitted those days where there were errors in the calculation of mid-price. These either occur due to the lack of trading on a particular day or due to mismatches in limit order data. From the data on foreign stocks we omitted non-tradable days. Lastly we applied an automatic filter, which omitted the days with recorded negative bid-ask spread and furthermore days where the bid-ask spread exceeded the mean bid-ask spread of the sample by five standard deviations. We assumed that such bid-ask spread outliers cannot be part of the data but must be caused by errors in the limit order data.

To produce the VaR and LVaR estimates in our research, we used the following procedures. We used a twenty-day rolling procedure to produce the mean values of returns and spread. For the GARCH variances we used a two hundred and fifty-day rolling procedure. The reason behind a larger data window was that our tests of GARCH coefficients showed, that they are unstable when using a smaller data window. For the quantiles of the Cornish-Fisher expansion we used a five hundred-day rolling procedure. This was due to the fact that estimates on smaller data windows are susceptible to effects of outliers in the data (Ernst et al., 2012).

We tested the accuracy of VaR and LVaR models with the with an unconditional coverage backtest. The exceedances in LVaR models were identified by comparing model forecasts with realized losses that were calculated as realizable net returns when liquidating a position (ibidem, 2012):

$$r_{net,t} = \ln(P_t/P_{t-1}) - \ln(1 - 1/2 S_t). \quad (4)$$

## CONCLUSIONS

The results on LVaR models were accurate for four out of five Slovenian stocks, but the VaR models underestimated risk in all cases. LVaR models were overestimating risk for all five German stocks, but VaR models showed a high degree of accuracy. The results of unconditional coverage tests for the Korean stocks showed that the LVaR and VaR models were accurate in three out of five cases. Lastly, LVaR models were accurate for all five of the American stocks, according to unconditional coverage tests, but VaR models were less accurate.

Backtests for the GARCH LVaR models showed that they were accurate on four out of five Slovenian stocks, and that GARCH VaR models underestimated the risk. GARCH LVaR models were accurate for three German stocks, and GARCH VaR models also underestimated the risk. The results for the Korean stocks showed that the GARCH LVaR models were accurate in 80 % of the cases and the GARCH VaR models in 60 %. For the American subset the GARCH LVaR models were accurate for two of the five American stocks, and that the GARCH VaR model backtests showed similar results as in all the prior stocks.



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# Behavioral Influences in Romanian Banks Lending Process

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## *ABSTRACT*

Romania witnessed a sharp increase in non-performing private loans (firms and households) - from 6.46% in September 2009 to 22.46% in March 2014. In addition to financial difficulties of the customers, error in loans analysis or fraud, the behavioral factors affected both the clients and the bank clerks. Emotions, misperception of risk, the level of financial literacy, social norms, have significant influence in lending process. The present paper makes an analysis of the behavior factors influence over the lending process and propose solutions to limit or highlight it. The findings may be used by banks to improve the quality of the loan portfolio but also by individuals to increase their awareness over behavior influences when contracting a loan. Regulatory bodies in the area can also use the findings in developing programs aimed to increase financial literacy of the banking consumers.

*JEL Classification: D03, D10, G02, G21*

*Keywords: bank loans, behavioral sciences, credit analysis, Romania*





## INTRODUCTION

In Romania, banks were involved in clients' financial education beginning with the launch of the first banking products (cards, savings products other than deposits, personal loans or as authorized overdraft account). These simple banking products were hard to understand for a population with a low financial literacy.

Regarding lending process, although banks had developed complex processes of loan applications analysis and monitoring, the volume of bad private loans (firms and households) experienced a sharp increase from 6.46% in September 2009 to 22.46% in March 2014<sup>1</sup>. The emergence of unexpected financial crisis has led to changes in individual income levels, financial and economic difficulties, with consequences in loan repayment capacity. The financial crisis was a hard lesson both for the private borrowers and the lenders represented by banking system.

From the banks point of view, a loan applications analysis for private legal entities requires two approaches: one based on quantitative financial analysis and the other based on qualitative analyzes mainly regarding the quality and experience of the management and shareholders, the risks of the business.

In case of individuals, analysis is focused mainly on the ability to maintain income over time, affordability of loan rates and historical financial behavior.

In spite of these regulated analysis, banks loan portfolios contain non-performing loans which are due to high indebtedness assumed, foreign currencies loans with highly currency risk, incorrect choice or lack the ability to choose the right loan.

According to Hyman Minsky<sup>2</sup>, banks can be "engines of capitalism", stimulating development or can be only "traders of loans". Starting from this idea, and taking into account the increase of bad loans, banks should change their approach and treat credit holders as business partners. This approach requires an increased professionalism of the bank staff involved in the process of granting and managing loans.

Analyzing NACP<sup>3</sup> reports, from 2012 to 2013 this institution received a total of 6084 complaints about banks and FNI<sup>4</sup>-s, claimed the following main aspects: non-contractual clauses, missing fees in the credit agreement, drafting contracts in a inadequate form, the existence of unfair terms, the perception of the risk fee, incomplete and/or incorrect information. Some of these complaints may be due to errors or breaches of contract clauses, but most of them are based on ineffective communication, a lack of understanding the terms or the loan functioning.

Emotions, misperception of risk, the level of financial literacy, social norms, have significant influence in the lending process.

According to some researchers<sup>5</sup>, which I agree with, companies are subject to the same behavior influences, driven by human beings who manage them. Even they are placed in various structures and action according to certain rules, they could take heuristic, biased or emotional decisions.

1 National Bank of Romania

2 Hyman Minsky, "Stabilizing An Unstable Economy", pp.458-468, ed. Publica 2011

3 NACP - National Agency for Consumer Protection in Romania

4 FNI – Financial Non-banking Institutions, Romanian classification

5 William Forbes, "Behavioral Finance", pp. 285, Wiley Publication, 2010





This paper mainly analyzes the connections and behavioral influences that arise in the process of lending over all the parties involved, and propose solutions from the same behavioral spectrum. In this respect I believe that from this research can benefit both sides: the banks and the customers throw their actions restoring the confidence in the banking system.

## LITERATURE

According to studies developed by Fehr E. and C. Zehnder (2005), confirmed by M. Brown and Zehnder C. (2006), implicit contracts between lender and borrower and lasting relationships between banks and their customers can be powerful tools of the financial discipline. The building of these long term relationship is based on trust, honesty and communication.

In order to strengthen these relationships behavioral researchers identified several ways that complement traditional coercive methods: emphasizing honesty, using customized financial language, easing the action that needs to be followed, highlighting key messages in correspondence, setting positive examples of community, rewarding positive behavior, highlighting the risk and consequences of false statements.

*Emphasizing honesty:* most people believe that they are honest and therefore tend to behave according to their own values. Based on this trend, it is possible to obtain a higher degree of honesty reminding people their willingness to be honest while they are filling out a form or a statement.

Several studies investigated different ways to implement this idea. One of them<sup>6</sup> showed that moving the signature from the end of a statement earlier in its body, significantly increases the level of honesty of the person. The study was based on a random process of individual statements in auto insurance contracts about the number of miles driven (the higher the number of miles reported, the higher the premium). Completed forms were related to a number of 3488 policies covering a total of 20741 cars. The results showed that people who signed early on the form reported by 10% more miles of their cars than those who signed at the end, thus showing a higher degree of honesty.

Earlier request to sign a form can be perceived like the common procedure in courts when before giving a statement the witness swore to say 'Nothing but the Truth'.

Another topic of study is how much the honesty reminder will last from an early signature on the form to the entire process of filling the form. For example, for a form of 40-50 pages is unlikely that an early signature to have effect until its final pages. In these cases the signature should be placed before the paragraph requiring the greatest honesty in statements or placing these important statements at the beginning of the form. Another solution would be to use the forms printed on paper with a cut box so that the signature to be visible regardless of which page is completed.

Researchers examined other ways to boost honesty<sup>7</sup> - in two laboratory experiments they eliminated false statements by asking participants to sign the honor code or reminding them many of the "10 Commandments". This growth of honesty can be achieved

6 Shu L., Gino F., Bazerman M., (2011), "When to Sign on the Dotted Line? Signing First Makes Ethics Salient and Decreases Dishonest Self-reports", Working Paper 11-117, Harvard Business School.

7 Ariely D., (2010), "Predictably Irrational: The Hidden Forces That Shape Our Decisions", Ed. Publica;



by signing honesty statements, or handwriting the statements before signature (e.g. “ I declare that the information filled in, completely correspond the truth”.

Academic literature<sup>8</sup> shows that there is a much higher probability of lying by omission than by declaring deliberately false information. This occurs because providing false information implies a much more obvious dishonesty which makes difficult to keep an honest man interior image.

*Using a custom language* One of the easiest methods is that letters to be specifically targeted to certain people. Also, when the message came from a certain person and not from an institution, it became more personal. Highlighting contact details of a representative can determine a response from the recipient more likely than if it is directed to a help-line.

An experiment conducted in the US<sup>9</sup> has analyzed the impact of post-its and handwriting on the probability of response in a survey. The survey which was accompanied by a handwritten post-it had a response rate of 76% compared to 48% for the survey handwritten message appear on the first page and 36% for the survey that this message does not appear. In addition, responds to letters with handwritten post-it attached, responded more promptly and more detailed. When the researcher added his initials and a message of gratitude response rate was even higher.

*Easy doing* – if you want a person to act in a certain way must provide the easiest way to do this action. A study conducted in 2009 on fees paying in 13 countries<sup>10</sup>, showed that the most performing administrations were those which pre-fill a large number of form fields with already known information. Pre-filling will ease the process and will ensure accuracy of the data entered in the form.

Another US study<sup>11</sup> on completing a form for obtaining federal aid for students showed that a form with pre-filled data already owned and providing support for completing other supplementary information, substantially increase the number of students enrolled. College enrollment rates have increased in the experiment next year from 34% to 42% for the groups that facilitated the application process, while for the group that offered only information there has not been a significant change.

Given recent and increasing interest in using smart phones mobile applications can be a good moment for implementing new ways for tax or loan rates payment. Such mobile applications can allow taxpayers to obtain information about the recovery of taxes or other helpful information, tax bills scanning to generate a database at the end of the year in order to calculate the tax, mobile banking applications.

Another way to simplify a process is to make it automatic, desired action to be implicit, without further efforts, only the inverse action, also possible, suppose filling out forms. In support of this idea we have classic examples of behavioral economics, according to which once the option of joining to a pension fund became automatic, the number of persons registered rise critically.

*Highlighting messages* contained in letters, brochures or other written communication have an important role to attract the reader's attention to specific information and to urge some action.

A study conducted in 2010 by Eyetracker emphasized that people focus primarily on the top of page (Headings), boxes and images, while the body of the letter is often ignored. The same study shows that the front page of the letter has a 2.5 times higher

8 Mazar N., Amir O., Ariely D., (2008), “The dishonesty of honest people: a theory of self concept maintenance”, Journal of Marketing Research, 45(6), 633-44

9 Garner R., (2005) “Post-it note persuasion: a sticky influence”, Journal of Consumer Psychology, 15(3);

10 McKinsey et. Al. (2009), “The Road to Improve Compliance: A Benchmarking Study of Tax Administrations”

11 Bettinger E., Long B., Oreopoulos P., Sanbomatsu L., (2011) “ The Role of Application Assistance and Information in College Decisions: Results form the H&Rblock FAFSA Experiment, <http://economics.uwaterloo.ca/documents/OreopoulosNov25.pdf>



attention than the back page, and people tend to consider actions required in the right - top of the page especially if the letters have a different color.

Daniel Kahneman 2011 introduces the term “cognitive ease” which includes other actions in order to help people to be better understood. He demonstrates that there are some ways to make messages more persuasive:

- using simple language;
- highlighting key information;
- using colors: red or dark blue have a higher percentage of persuasion and retention than green, yellow or pale blue; while using too many colors can create confusion among readers.

Studies<sup>12</sup> have shown that the use of images in written communication contributes not only to attract the attention of readers, if the images are relevant, but can also helps to understanding and memorizing the text.

Of course the images can be effective when the person open the letter and begin to read it. In order to spark the interest in opening them, the expeditors have begun to use messages and images on the outside envelope.

*Providing positive examples from community:* people are strongly influenced in their actions by their peers behavior and values representing social norms. Most people do not commit fraud because they have a sense of moral obligation to act honestly, what is the consent of others.

This idea can be used to emphasize a particular behavior using a simple description of the actions of other people in the community. This type of influencing behavior was demonstrated by a series of studies on encouraging recycling, rational use of energy and water, reduce household waste<sup>13</sup>.

Using descriptive rules had proved to be effective in increasing fiscal conformism. In an experiment conducted in Minnesota<sup>14</sup> where taxpayers were informed about the low level of tax evasion in that state led to the correction of erroneous perception that a large number of the population does not pay taxes, increasing the tax rate conformism.

Scientific literature shows that descriptive norms are even more effective if they can be associated with a given population or group, for example referring to a regional or local area instead of a national one.

*Reward positive behavior* can be cost-efficient in some cases where it is aimed to motivate people to act in a certain way.

The easiest way of rewarding positive behavior is to thank the person for his behavior with a thank you letter for payment the fees before the deadline, for full payment of rates on bank loans, or purchase more products from the same supplier, etc. The research on this subject is at the beginning, but I considered a response of gratitude to positive behavior can bring significant effects at a very low cost.

12 Glenberg AM, Langton WE, (1992), “Comprehension of illustrated text: pictures help to build mental models”, Journal of Memory and Language 31(2);

13 Schultz W.M., Nolan J.M., Cialdini R.B., (2007), “The constructive, deconstructive and reconstructive power of social norms”, Psychological Science 18(5): 429-34

14 Coleman S (2007), “The Minnesota Income Tax Compliance Experiment: Replication of the Social Norms Experiment”, MPRA Paper 5820, <http://mpa.ub.uni-muenchen.de/5820/>



More explicit methods to stimulate positive behavior are to offer financial prizes in lotteries organized for a higher number of participants to a particular action. For example, the Chinese tax authorities printed the lottery numbers on the tax receipts to encourage conformity and determine a large number of consumer to ask for tax receipts.

Researchers<sup>15</sup> have shown the lottery prizes are effective in terms of cost, with a small number of awards can influence the behavior of large mass of people, but using them repeatedly these incentives could remove the individual from his main motivation.

According to Brown and M. Zehnder C. (2006), when between clients and their banks occur repeated transactions, the relationship born cause a much better customer discipline. Therefore the bank must show determination in maintaining long-term customer relationship, even by granting incentives.

*Emphasis the risk and the consequences of false statements:* the traditional way to divert someone from fraudulent intent is to increase the punishment or the efforts to catch these people in the act. There are several studies showing that there is a greater likelihood that that people do not behave honestly if there is a low or ambiguous perception of the consequences or the possibility to be caught.

A study of Uri Gneezy in 2005 shows that people are reluctant to lie in favor of personal financial benefits if the impact on other participants is high. Because people believe that fraud is committed against public entities, a greater awareness of the consequences of their actions on other peers can have significant influence on reducing negative actions. Local public entities can reveal the tax-payers the effect of not paying taxes on services financed from the local budget (clean public spaces, certain social services, etc.)

Another result of the study shows that the probability of committing fraud increases if people who commit such acts think to have a certain degree of anonymity. This can be countered by publishing online or in written publications the persons who committed repeated frauds, frauds with significant value or bad payers. The publication of negative information must be done with caution, to avoid the idea that such behaviors are widespread in society. This can have adverse effects by developing negative social norms. A solution is publishing this information on specific sites where those interested can check. Since 2004 in Romania operates the Credit Bureau, member of the European Association of Credit Bureaus that provide information in order to identify and quantify credit risk, to growth credit quality and reduce the risk of fraud.

## BEHAVIORAL FACTORS IN THE LENDING PROCESS

Communication errors can occur in all phases of the lending process, which can cause payment delays and ultimately transforming the loan into a bad one. The causes of these errors are diverse: from the emotions expressed by the bank client to the bank advisor expertise.

To better identify these influences we split the loan process in two phases: the publicity and signing credit contract and the phase of implementation, monitoring and recovery.

In both phases communication errors related to poor customer information, and its ability in understanding the terms used, the course of the loan and the risks assumed.

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15 Ayres I., (2010), "Carrots and Sticks: Unlock the Power of Incentives to Get Things Done", Random House Publishing Group



a) Phase advertising and signing credit contract

Making an inventory of misunderstandings that can show up in this phase we identify errors made by bank officer, and also by customer (table 1).

*Table 1: Causes of poor client-bank communication in phase of advertising and signing credit contract*

Causes due to bank officer	Causes due to client
<ul style="list-style-type: none"> <li>- Incomplete information on the characteristics, operation costs and credit process;</li> <li>- Use of inappropriate financial language, according to client financial knowledge;</li> <li>- Incomplete explanation of the contractual clauses;</li> <li>- Lack of knowledge or experience;</li> <li>- Pressure boosting from commercial and quantitative results asked by the bank;</li> <li>- Behavior that is contrary to professional ethics</li> </ul>	<ul style="list-style-type: none"> <li>- Lack of basic financial knowledge;</li> <li>- Misunderstanding of risks assumed;</li> <li>- Inaction in comparing offers on the market;</li> <li>- Incomplete or false statements;</li> <li>- Shame to recognize misunderstanding of contract terms in front of the bank advisor;</li> <li>- Excessive politeness or intimidation from bank advisor;</li> <li>- The hurry to get the money as soon as possible.</li> </ul>

Source: author

One influencing factor over bank advisors honesty in this phase is the commercial pressure. Financial rewards based only on achieving quantitative commercial targets can influence the information communicated to the customer. As we have seen, the research showed that the lie of omission is more likely than providing false information.

b) Phase of implementation, monitoring and recovery of credit

Also in this stage we identify communication errors with consequences in number of complains registered, delayed payment rates increasing the bad loans. The causes identified in this phase are listed in Table 2.

*Table 2: Causes of poor client-bank communication in phase of monitoring and credit recovery*

Causes due to bank officer	Causes due to client
<ul style="list-style-type: none"> <li>- Initiating communication with clients only related with negative events (non-payment of rates, non-renewal of insurance policies, etc.);</li> <li>- A reduced communication frequency;</li> <li>- Use of a standardized language, hardly understood by the client;</li> <li>- Presentation of drastic, radical recovery solutions, beginning with the first notification of delay;</li> <li>- Changing the banking advisors during the loan, leading to loose the connections born at the loan granting;</li> <li>- Lack of experience or lack of communication skills of the bank advisor (especially in the recovery process)</li> </ul>	<ul style="list-style-type: none"> <li>- Lack of basic financial knowledge;</li> <li>- Misunderstanding of the risks assumed;</li> <li>- Inaction to the bank communication;</li> <li>- Shame to recognize financial problems to friends, family;</li> <li>- Non-recognition of financial difficulties</li> </ul>

Source: author

Note that many of these cases are related to the experience and attitude of the bank advisor and also to the customer financial knowledge.

## SOLUTIONS

One of the obvious solutions would be improving bank staff training in terms of technical knowledge but also in relational, communication capabilities. In Romania, even if major banks have integrated, specialized training programs the higher rate of staff turnover makes these programs not very effective.

Another important remedy is increasing financial literacy of the population. This is a long process that requires special attention especially from regulatory or education authorities.

In the following we present the issues identified by behavioral sciences that would facilitate understanding, communication, would strengthen the commitment to pay on a loan, would reduce the number of complaints after signing the contract and ultimately lead to a lower NPL ratio. Doing this would eventually lead to a strong relation between bank and the client.

### A) PHASE OF ADVERTISING AND SIGNING CREDIT CONTRACT

*Emphasizing honesty* This concerns both sides so the bank or its representative and the customer.

From the bank's point of view, this can be done since the time of printing leaflets and posters with commercial messages that must not show incomplete or distorted information.

Bank staff may be tempted to provide incomplete information. These omissions could be avoided by providing a summary list of characteristics of the type of credit including costs of the related products (current account, card, etc.). This should include the most common operations performed by the client, expressed in plain language, with the possibility of completing this information either on the bank's website or through a subsequent visit to the bank adviser. As a proper time of presenting this list I consider it to be appropriate at the end of the first meeting, when the bank adviser is aware about customer profile and the customer can study the characteristics of product and costs until a next meeting.

Regarding customer honesty, as we have seen, moving the signature at the beginning of the forms and contracts, including the introduction of such statements like "Nothing but the Truth" may have important influences on the accuracy of statements.

*Using a custom language*

To provide personalized products and services tailored to customer typology, and a personalized treatment, banks perform customer segmentation by certain criteria (legal form of organization, income, turnover, exposure, etc.). Based on this segmentation banks can create specialized counselors to advise each customer segment, using a specific language accepted and understood by this type of client.

Thus bank can train counselors to treat regular customers, who need simple banking products (current account, card, credit, deposit) or to provide information on sophisticated banking products (investment products, portfolio management shares, derivatives). Also banks that hold units in rural areas can prepare counselors with information related to specific income in this area, specific products, etc.

In the case of legal persons (small businesses / corporations) on these segments were already several concerns.





*Easy doing*

To facilitate filling in forms, banks can use software to pre-fill forms with data from their database system thus making also a verification of the existing data. In this way banks will shorten the client time spent filling in the forms and reduce the likelihood of errors.

*Emphasis risk and consequences of false statements*

In order to prevent false or incomplete statements and also to determine a sound financial future behavior related to repayments of the loan, the bank advisor must highlight the risks of such behavior. The presentation of the financial consequences of recording an inappropriate behavior in the Central Credit Bureau database and the duration of records may influence future behavior of the client.

*Providing positive examples from community*

Using descriptive rules, exemplifying sound financial behavior of other people from the loan applicant community can influence its future behavior.

Banks with a large number of branches can be very effective in applying this idea because treating customers in their proximity.

## B) PHASE OF IMPLEMENTATION, MONITORING AND RECOVERY OF CREDIT

*Easy doing*

To determine customers to pay the loan rates in time, banks must provide ways for making this action very easy. The development of internet and the increased use of mobile devices have led to alternative channels that replace bank teller. Such payments can be made independent of existing banking unit and its hourly restrictions by internet banking or mobile banking.

Another way of paying loan rates offered by most banks is direct debit on the current account. Receiving regular income in the current account will absolve the holder from other actions in order to pay the loan rates.

*Using a custom language and underlying messages*

These solutions can be used in written communications between bank and customer after credit approval.

Following the evolution of written messages we can say that their form has improved in recent years: the messages come from a representative of the bank, indicate more channels to contact: sales advisor, a call center, or institution's website.

However banks still use an official, sometimes uninspired language in written communication. We also have to mention the moment when most banks begin to write their clients is linked about negative events: outstanding debts, increases in interest rates and fees, recovery solutions, etc.

Thus, to determine a positive response or action as a result of written communication banks should act on the following:

- Use a simple and more familiar language;
- Highlighting important messages and use the colors (red / blue) in the text body;



- Insert handwriting as well as post-its with gratitude for the action required;
- Use of different tones when send repeated messages regarding the payment of arrears;
- Regular messages on the loan status and thanks for the timely payment of installments;

#### *Reward positive behavior*

A correct financial behavior of the client during the loan life must be rewarded and made known in the community.

As we have seen one of the easiest ways is a simple thank-you letter. If this involves also a participation in a lottery organized to reward “the most correct client” it will have a greater impact on the customer and the community.

Recognition and appreciation of customer behavior has a positive effect on long-term relationship between the bank and the client.

#### *Providing positive examples from community*

As shown in phase advertising and credit granting, exemplifying sound financial behavior of other people from the nearest community of the loan applicant can influence its future behavior.

## CONCLUSIONS

As we have seen, behavioral influences may occur both in case of individual consumer banking products and bank representative. In this paper we identify remedies to these influences, remedies from the same field of behavioral sciences.

In order to reduce or even eliminate these influences, the proposed solutions have to be applied in the same time with a process of increasing education and financial capacity. This can be achieved by granting easy access to information and providing easy comparison of financial proposals.

Thus, supervisors and market regulators can act in the following ways:

- developing an official educational site, regularly updated, explaining banking products in an easy language and enable the comparison between bank offers;
- introducing financial education programs throughout the educational cycle;
- developing exhibitions, interactive museums to help visitors become aware of the influence of these factors.

Limitations of the present work can be represented by impossibility to capture these influences in an econometric form and to measure the intensity of their manifestation.

Further research can observe the influence of these factors in the selling process of other banking products (investment products, savings, bankassurance, etc.), and also can analyze and effectiveness of other ways to remove these influences.





## DISCLAIMER

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### WEB SITES :

1. [www.bnr.ro](http://www.bnr.ro)
2. [www.anpc.gov.ro](http://www.anpc.gov.ro)



# Measuring Entrepreneurship at the International Level

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## *ABSTRACT*

Many studies focused on entrepreneurship do not provide definitions and/or entrepreneurship measures comprehensive enough for an in-depth empirical verification. The applied research includes various measurements on this subject and different dimensions that usually focus on only one aspect of entrepreneurship or do not provide the required amount of international comparability. Consequently, we face diverse methodologies and statistical problems, as highlighted in this paper. The main objective of this paper is to give a systematic overview of the entrepreneurship measures most commonly used on a national level. We conclude that entrepreneurship measures must be carefully selected and interpreted so that they can be appropriately considered when preparing policy-making recommendations.

*Keywords:* **entrepreneurial activity, entrepreneurship measures, entrepreneurship policy, evidence-based policy.**

## INTRODUCTION

As an extremely important and influential socio-economic phenomenon, entrepreneurship is at the heart of numerous studies. Yet we face numerous limitations when we want deeper insights, especially when we compare the research findings within broader international audiences. According to Verheul et al. (2002), no generally accepted definition of entrepreneurship exists, which—as a multidimensional concept—interferes in various scientific fields, and the measurement and comparison of the level of entrepreneurship for different time periods and countries are complicated by the absence of a universally agreed upon set of indicators.

The previous consensus on the definition of entrepreneurship is needed. Such a definition must be holistic and incorporate different approaches to minimize the high degree of controversy on the theoretical frameworks. In addition, key dimensions must be identified to advance empirical research, considering the possibility of further integration and use of information. International comparability can only be achieved through general agreement on a common methodology (Congregado, 2008), for which at least minimum consensus on key influential factors and determinants is needed.

Numerous complex measures of entrepreneurial activity have recently appeared, including the widely used Kauffman Index of Entrepreneurial Activity, a leading indicator of new business creation in the United States. Capturing new business owners in their first month of significant business activity, this measure provides the earliest documentation of new business development and enables a deeper insight into demographic and geographic characteristics of new entrepreneurs across the country (Fairlie, 2012). The Danish entrepreneurship index, based on data from OECD countries, notes the advantages and disadvantages of Denmark as an entrepreneurial state (Hoffmann et al., 2006). The Global Entrepreneurship & Development Index (GEDI) contributes to an understanding of economic development by capturing the essence of entrepreneurship and the contextual feature of entrepreneurship by measuring entrepreneurial attitudes, activity, and aspirations (Acs and Szerb, 2012). The index is created by averaging all three sub-indexes, which are mainly based on the Global Entrepreneurship Monitor (GEM) databases, taking into account both the individual and institutional sides of entrepreneurship. Numerous other initiatives that consider different framework conditions and empirically measure entrepreneurial activity in a given country were also found.

## MEASURING THE QUANTITY OF ENTREPRENEURIAL ACTIVITY

When studying entrepreneurial activity and other results of entrepreneurship process, researchers employ a static or dynamic perspective (Wennekers, 1997). The static perspective views entrepreneurship as a component of the economy's industrial structure at a particular point in time. The dynamic perspective views entrepreneurs as agents of change; they start new businesses, experiment with new techniques and a new organization of production, introduce new products, and even create new markets (Wennekers et al., 2002). Using static measures of entrepreneurial activity, we measure the prevalence or extent of already established entrepreneurship. The most common static indicators of entrepreneurship are: self-employment or business ownership rate and share of small and medium-sized companies. For the dynamic perspective, several additional indicators can be used, including nascent entrepreneurial activity (early, nascent, new entrepreneurship), gross entry of new businesses, and the turbulence rate (total of entry and exit or birth and death).



The most commonly used dynamic measure of entrepreneurship is the TEA Index (Total Early-stage Entrepreneurial Activity), developed within the world's largest entrepreneurship research program (i.e., GEM). Data from the TEA Index for various countries are available from 1999 onwards. The other such measure is the rate of entry (births) and exit (death) of companies. Information on companies' entry (and exit) is available for many countries. Eurostat regularly reports the number of new companies and statistics of entries and exits (project of business demography), and the World Bank has started to collect data on new company registrations and new limited companies. The OECD Business Demography Database also provides information on companies' entries and exits.

The measures introduced thus far relate to the level and/or dynamics of entrepreneurship and the share of the adult population already engaged in entrepreneurship or on the entrepreneurial path. However, they do not draw qualitative differences between entrepreneurial activity as they do not measure characteristics such as the perception of opportunities, entrepreneurial ability, creativity, innovation, or entrepreneurial aspirations for high growth rates. As such, they can only provide guidance to policy-makers on the quantity, but not quality, of entrepreneurship, which requires other measures.

Policy-makers have recently focused on firm growth because such firms (called *gazelles*) contribute a disproportionate share of all new jobs [Birch, 1979; 1987]. According to Širec and Crnogaj (2010), the intentions for growth and sources of growth are not evenly distributed among companies. Company growth can be measured as growth in total revenue, number of employees, market value of company assets, value added and similar. Information can be obtained from statistical data or other national institutions in international comparisons, although the proper harmonization of data is required.

GEM is one of few international studies providing insights into realized and intended growth. These assessments are subjective, as they are derived from the entrepreneur estimates, but they are the only ones internationally harmonized on such a large sample of countries. GEM has recently explored additional features related to the quality of early-stage entrepreneurial activity, such as employment and rapid growth potential, innovation, and internationalization.

## INTERNATIONALLY COMPARABLE COMPOSED MEASURES AND ENTREPRENEURSHIP DATASETS

The dynamics of the process can be vastly different. Given the numerous determinants, the broad nexus among entrepreneurship, environment, and economic development should be considered to understand why the relative contributions of entrepreneurship can vary significantly across countries and regions (Acs and Szerb, 2009). Although the measurement of institutional environment has been going on for decades, the measurement of entrepreneurial activity is a relatively new subject. Several ongoing research projects seek to understand entrepreneurs' and institutions' interactions to produce innovations and deliver new goods for society (Acs and Szerb, 2012). Established international and global research networks and associations seek to provide internationally comparable measures of entrepreneurial activity.

### GLOBAL ENTREPRENEURSHIP MONITOR (GERA)

GEM is a longitudinal research project examining the relationship between entrepreneurial activity and national economic growth. Unlike other studies, GEM does not focus on business and statistical monitoring of the business, but the entrepreneurial

individual who embarks on an entrepreneurial career and starts a business (Reynolds et al., 1999). This study offers numerous data not available from the Business Register, with insights into the earliest stages of entrepreneurship, which is highly relevant information for policy and economic development policy (Rebernik et al., 2013).

## ENTREPRENEURSHIP INDICATORS PROGRAMME (OECD–EUROSTAT)

In the 1990s, the OECD began seriously focusing on entrepreneurship and its role for the national economy and development, with initial efforts to collect information about entrepreneurship. In 2006, they launched the Entrepreneurship Indicators Programme (EIP) to establish internationally comparable data on entrepreneurship and its determinants (OECD, EIP, 2011). In 2007, the Eurostat joined the project to create a durable, long-term program of policy-relevant entrepreneurship statistics (Ahmad and Seymour, 2008). The OECD–Eurostat project aims to develop policy-relevant and internationally comparable indicators, based on an analytical model and measurement infrastructure that allow for gathering comparable data (OECD, EIP, 2011).

## WORLD BANK ENTREPRENEURSHIP DATA

The World Bank Group Entrepreneurship Survey or World Bank Group Entrepreneurship Snapshots (WBGES) monitor entrepreneurial activity in more than 100 countries worldwide. This joint effort by the World Bank Research Group, International Finance Corporation, and Kauffman Foundation provides a unique indicator of business creation around the world and facilitates the investigation of the factors fostering dynamic private sector growth (WBGES, 2010). Their definition of entrepreneurship limits findings to the formal sector and, thus, the WBGES gathers data on corporations defined as private companies with limited liability. The main variable of interest is new business entry density, defined as the number of newly registered limited liability companies per 1,000 working-age people.

## EUROSTAT AND EUROBAROMETER ENTREPRENEURSHIP DATA

In Europe, the European Commission also significantly contributes to entrepreneurship research. Eurostat implemented the first Factors of Business Success (FoBS) survey in several EU countries and the European Commission's Eurobarometer in 2000 by measuring attitudes toward various aspects of entrepreneurship in both Europe and the USA (Davis, 2008). Eurostat collects, integrates, and disseminates data from EU national statistical offices and provides comparable and harmonized methodology. The Flash Eurobarometer surveys public opinion related in part to entrepreneurship. Various studies/projects carried out under the European Commission seek to explore entrepreneurship to prepare proposals and recommendations for policy-makers, analyses, and companies. For example, the Observatory of European SMEs, designed in 1992 and implemented in the framework of the European Network for SME Research, was replaced in 2008 by the SME Performance Review, which was built based on the Small Business Act to monitor its effective implementation.

Table 1 summarizes the internationally comparable initiatives measuring entrepreneurial activity in certain countries and considering key entrepreneurial framework conditions, among others.



Table 1: Overview of Initiatives Measuring Entrepreneurial Activity Across Countries

<b>Entrepreneurial Activity</b>					
	Global Entrepreneurship Monitor - GEM (GERA)	OECD-Eurostat Entrepreneurship Indicators Program - EIP	World Bank Group Entrepreneurship Snapshots - WBGES	Eurobarometer Survey on Entrepreneurship (EU)	SME Performance Review – SBA Fact Sheet (EU)
<i>Purpose</i>	Measure differences in entrepreneurial attitudes, activities and aspirations	Internationally comparable statistics on entrepreneurship and its determinants	Compare dynamics of private companies - business creation (formal sector)	Measure entrepreneurial mindset, motivation, experiences and obstacles linked to self-employment	Monitor performance of SMEs and implementation of Small Business Act
<i>International coverage</i>	over 99 countries in all years	OECD countries (and candidates)	112 countries	EU 27, EEA/EFTA + 10 non-EU countries (+ in 2012: Brazil, Israel, India and Russia)	EU 28 + Albania, Macedonia, Iceland, Israel, Liechtenstein, Norway, Montenegro, Serbia and Turkey
<i>Time series - data/report</i>	Annual 1999-2014/15	Annual 2006-2014	Annual 2004-2010	2000-2003, 2004, 2007, 2009, 2012	2008, 2009, 2010, 2011, 2012, 2013/14
<i>Unit of analysis</i>	Individual	Company	Company – new business entry density (limited liability)	Individual	SMEs
<i>Data sources</i>	Representative samples of adult population between 18-64 years, at least 2.000 per country (APS)	OECD, WB, GCR, GEM, Eurobarometer, national statistical offices and other	WBGES database, alternative sources, (business registers, ministries, statistical offices and other)	Representative samples of adult population 15 years and older; either 500 or 1.000 per country	Key SMEs indicators, EC databases, alternative sources (Eurostat, OECD, WB, ECB, GEM and other)
<b>Influential Factors of Entrepreneurial Activity – Institutional Environment</b>					
	National Expert Survey – NES GEM (GERA)	Ease of Doing Business (WB)	Global Competitiveness Index (WEF)	Index of Economic Freedom (Fraser Institute)	Index of Economic Freedom (Heritage Foundation)
<i>Purpose</i>	Measure opinions on various aspects and components of entrepreneurial environment in particular country	Objective information on the business regulations property rights protection and ranking of countries according to the quality of business environment	Countries ranking according to economic performance and or national competitiveness	Evaluation of economic freedom  EFW index	Evaluation of economic freedom  IEF index
<i>International coverage</i>	over 99 countries in all years	189 countries	148 countries over the years	152 countries	185 countries over the years
<i>Time series Data/report</i>	Annual 1999-2014/15	Annual 2003-2014	Annual, GCI 2004-2014/15	Annual 1970-2014	Annual 1995-2015
<i>Data sources</i>	At least 36 interviews with experts per country	Doing Business database collected in cooperation with over 9.600 experts	Executive Opinion Survey, other data sources (IMF, UN, WB, other)	Economic Freedom Database, World Bank Development Indicators	Different data sources (IMF, WB, WTO, government publications and other)
<b>Contextual Indicators</b>					
	Demographic characteristics (statistical offices, WB, IMF)	Economic growth-GDP (IMF)	Social (sustainable) development		

Sources: Adapted from Crnogaj, 2012 and partly from Bosma et al., 2012.



The presented entrepreneurship measures and determinants suggest that many large and important differences exist among them. Godin et al. (2008) and Crnogaj (2012) stated that many entrepreneurship measures exist, but they often focus on only one aspect of entrepreneurship, do not allow for international comparison, and—when comparison is enabled—are often conducted among developed countries.

Table 1 suggests that selecting a specific data source cannot be a random task; the purpose for collecting the data must be carefully considered as only then can we choose the right database from which to draw the data. Therefore, the search for a systematic set of indicators to measure the key dimensions of entrepreneurship is critical to ensure the progress of economic analysis, thereby providing a foundation for appropriate evidence-based policy making.

## CONCLUSIONS

For the operationalization of entrepreneurship, researching various definitions, research frameworks, determinants selected, etc., can lead to different entrepreneurship measures. Each individual measure represents a different aspect of entrepreneurship. Understanding entrepreneurship as merely the ownership and management of established businesses can generate satisfying results from dimensions such as the number of self-employed, business owners, or companies. Entrepreneurship can also be understood as a process of setting up a new business, including the activities required before the actual start-up. Finally, we can understand entrepreneurship as the proportion of small businesses, the fastest-growing companies, and the like. All of these are quantitative approximations that measure entrepreneurship in various ways. However, to determine the actual profile of entrepreneurship on the national level and identify appropriate policy measures to encourage it, we should also consider other qualitative, institutional, and demographic variables.

The discussion also raises questions about the appropriate methodology and data sources for measuring entrepreneurial activity. Many existing databases have been designed for completely different purposes than studying entrepreneurship and thus often do not provide an adequate basis for researching or measuring entrepreneurship from an academic perspective. The problems are even more pronounced in international comparisons, where researchers must consider numerous additional features and substantive issues, such as the micro- and macro-business environment, which when creating new businesses can range from very supportive to hostile.

The presented business dimensions offer certain advantages and disadvantages that must be considered to choose the appropriate approach for measuring national entrepreneurship to enable international comparisons. Many are also complementary. Only with a sufficiently comprehensive and consistent definition of entrepreneurial measures and dimensions can we explain to what extent individual factors influence the entrepreneurial activity and identify important policy-making areas to promote entrepreneurship at the national level.

Many open hypotheses in entrepreneurship research still exist and need to be clarified to develop a comprehensive picture of the entrepreneurship phenomenon. For now, individual users must decide which data collection method and thus interpretation approach are best suited to their needs, which might not be the best recipe for reliable research results.





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# Investors Activity in the Recovering Markets

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## *Summary*

We have conducted the laboratory experiment using the simulated market price movement framework and analyzed the real stock exchange data. First, we could observe the heterogeneity of the investors' activity in the experiment and in the real stock data. Secondly, we can observe that the markets adopt to the price changes, faster and in more flexible way than participants of the laboratory experiment. Such phenomenon can be caused by inclusion of different than the past prices sources of information in the investment decision process and higher level of expertise and experience of professional investors than of the students. These factors may also cause the higher investors activity in the recovering markets.

## INTRODUCTION

There is an extensive empirical research and literature on the role of the trade volume and its relation to the price changes. For example, Karpoff (1987) names four reasons for the importance of price-volume relation. He mentions, among others, the explanatory advantage of such models, that take both factors, namely price and volume into consideration at the same time. There is also a common knowledge that the trade volume positively correlates with absolute price changes and with the positive price changes at the stock market. However there are no definitive theoretical explanations of this phenomenon regardless the strong empirical evidence. Most of the literature concentrate on either behavioral or market microstructural based explanations. Judd, Kubler and Schmedders (2003) name life-cycle factors, asymmetric information, heterogeneous beliefs, and incompleteness of the asset market that may play a significant role in generating trade volume. The role of the public information announcement is also discussed by Karpoff (1986), Kim and Vereccia (1991) or Suominen (2001). Næs, Skjeltop and Ødegaard (2011) discuss the influence of the business cycles on the trading volume and find the strong relation between stock market liquidity and the business cycle. Gagnon and Karolyi (2009) investigate the relation between information, trading volume and international stock return co-movements.

Investors' investment strategies can also influence the price and volume relation that is observed in the markets. Following trends is a very common strategy (behavior) observed on the financial markets while making investments decision (Kubińska, Markiewicz and Tyszka, 2012, Kubińska and Markiewicz, 2012). Investors can be classified as "momentum" and "contrarian" investors. Based on his/her own convictions momentum investor employs the strategy where he/she buys a stock in upward trend and/or sells a stock in downward trend, while the contrarian strategy is the opposite, i.e. contrarian investor sells a stock in upward trend and/or buys a stock in downward trend. De Bondt (1993), suggests that professional investors use contrarian strategy, while individuals use the momentum strategy in one of the first research in this field. Tyszka Zielonka, Dacey, and Sawicki (2008) confirmed that the most popular strategy for layman is the momentum one. There are also opposite results described in the literature. The contrarian strategy was dominating in the group of individual investors (Odean 1998, Dhar and Kumar, 2001; Kubińska and Markiewicz, 2008), while the momentum strategy was extensively used by professional participants of the market (Grinblatt, Titman and Wermers, 1995).

Statman, Thorley and Vorkink (2006) state that "the proposition that investors are overconfident about their valuation and trading skills can explain high observed trading volume. With biased self-attribution, the level of investor overconfidence and thus trading volume varies with past returns." Overconfidence is a phenomenon commonly observed in the markets (Kubińska and Markiewicz, 2013). Literature distinguishes several basic forms of overconfidence:

- Miscalibration – overconfidence with respect to the accuracy of the information actually held (Lichtenstein, Fischhoff and Phillips 1982). The participants of the different experiments have been asked both to estimate the value of a certain variables, e.g. current share price and provide the respective confidence intervals of these estimations, at a certain confidence level. Generally the confidence intervals, given by the participants were too narrow.
- Better than average - the tendency of a person to regard her/himself as better than compared to the average person in a group or population. Svenson (1981) shows that nearly all respondents claimed themselves as better than average drivers.
- Illusion of control - the tendency to overestimate the personal influence/control on the probability of success, compared to the objective probability (Langer, 1975, Barber and Odean, 2001). Fenton-O'creevy, Nicholson, Soane and Willman (2003) find the existence of illusion of control among the professional traders.

The goal of our paper is twofold. First, we want to identify behavioral patterns of investors activity in the stock markets in different phases of the business cycle, especially in the recovering markets. Secondly we want to verify to what extent, the trade volume

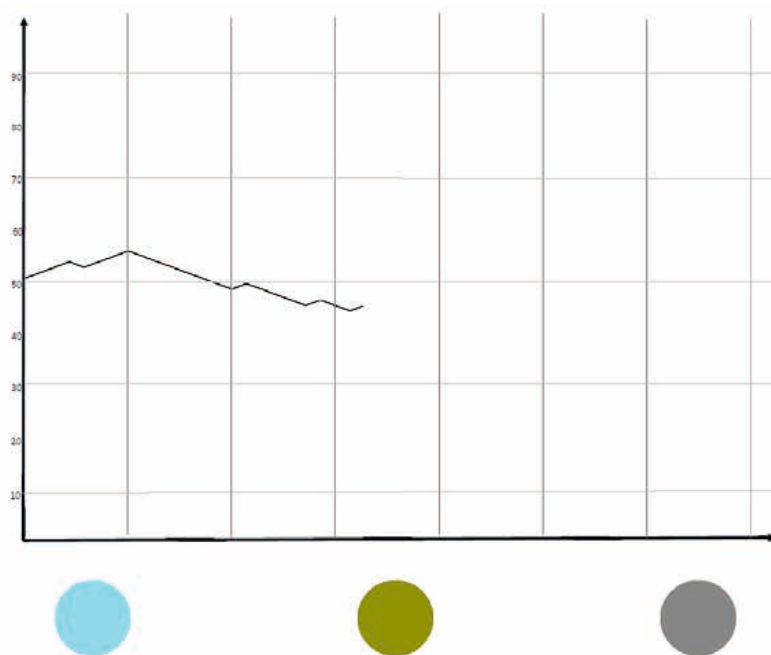


changes in the stock markets, can be explained by the reactions of the investors to the observed price changes. For this purpose we have adopted the experiment of Fenton-O'crevy et al. (2003) to measure the participants activity in the different phases of the simulated market: sideways, upward and downward trends. Students of the Capital Markets Major of Cracow University of Economics participated in this experiment. We also analyze the average daily trading volume pattern in the selected stock exchanges using the similar statistical methods.

We discuss and present the experiment and the results in the next chapter. The results of the statistical analysis based on the real stock exchanges data are presented in the consecutive chapter. Discussion of the results concludes the paper. Some results are presented in the appendix.

## INVESTORS ACTIVITY - EXPERIMENTAL APPROACH

The experiment was carried out on a group of 53 students of the Capital Markets Major during the Technical Analysis course. Two groups of students were involved in this experiment, namely 29 full-time students and 24 part-time students. Students could observe the simulated price movements (prices were changing stepwise) on the screen in the experiment, see Picture 1.



*Picture 1. The sample screen of the experiment*

We ran 15 rounds of the experiment. We used different parameters (i.e. slope, probability of price increase) in different rounds of the experiment. Students have had no control over the price movements observed on the screen, only in 4 of 15 rounds. Students have had limited control over the observed price movement, in all other rounds. Such experimental situation cannot be easily compared with real stock exchange environment, where single investor cannot influence the observed market price in a significant way (in a regular situation). Therefore we have focused on the results of only 4 selected rounds in this paper.

At the beginning of the experiment students were informed about the number of single steps (50) in each round. Students were also informed that they can affect the simulated price movements by placing the cursor over one of the three colored control fields. Depending on the group (which they would be assigned in a random way) the impact may differ. We also informed students that it is also possible that their actions would have no effect on the simulated price movements. Additionally each of the control fields could have only one of the three specific functions:

- the control field might be responsible for the change of the price increase probability,
- the control field might be responsible for an increase of the observed price absolute change (both decrease and increase) in a single step (a change of a slope) - however this can only be effective in a certain percentage of the steps which this control field was used in,
- the control field might have no effect on the observed price movement.

The main task given the students in the first round was to cause the observed price reach the highest possible value by placing of the cursor over the appropriate control field. It is also worth mentioning that steering could have positive or negative impact on the goal achievement, as it could alternatively increase or decrease the probability of the price growth. Second task was to guess what were the functions of the control fields during the experiment. We also introduced some simplifications in the following rounds of the experiment. Namely we reduced the number of control fields to only one. The one responsible for potential changing of the price increase probability. The parameters used in relevant 4 rounds are summarized in the Table 1

*Table 1: Experiment parameters in each round.*

Round	Number of control fields	Base probability
R <sub>1</sub>	3	50%
R <sub>2</sub>	1	50%
R <sub>3</sub>	1	75%
R <sub>4</sub>	1	25%

Thus we simulated the market in a sideways trend in rounds R<sub>1</sub> and R<sub>2</sub>. The complexity level of the task was higher in a round R<sub>1</sub> than in a round R<sub>2</sub>. We simulated market in the upward (respectively downward) trend in a round R<sub>3</sub> (respectively in a round R<sub>4</sub>).

Furthermore, we applied, so called “zigzag” (Alexander, 1961, 1964) filter to the simulated price time series of each round to identify secondary (micro) trends. The general idea behind the filter is as follows. Identification of the significant local maximum and local minimum price levels is done in the first step. Significant means that the difference between two consecutive local extremes - one minimum and one maximum - must be greater than a given threshold (this threshold can be expressed as a percentage or as an absolute value). Secondly, significant local extremes are interconnected by straight lines. We use the name secondary trend for the price formation in the period between significant local extremes. Whereas we use the name market trend for the price formation in a single round. We used zigzag function of R Technical Trading Rules package in the calculations.

We calculated the frequency of steering for each round and each secondary trend, The frequency of steering is defined as a quotient of the number of steps, during which the students tried to influence the price movement by placing the cursor over control areas and the total number of steps in each secondary trend. The frequency of steering is the major dependant variable in the analysis presented further. For each round we compared the steering frequencies during:

- upward secondary trend movements and downward secondary trend movements (test = “INCERASE\_DECREASE”),



- the first half of the secondary trend movements and the second half of the secondary trend movements (test = “HALF”) - in case of the odd number of steps in a single secondary trend, the mid step was assigned to first or second half by random,
- the first half of the upward secondary trend movements and the second half of the upward secondary trend movements (test = “HALF\_INCREASE”),
- the first half of the downward secondary trend movements and in the second half of the downward secondary trend movements (test = “HALF\_DECREASE”),
- the first 3 steps of the secondary trend movements and the remaining steps of the secondary trend movements (test = “THREE”),
- the first 3 steps of the upward secondary trend movements and the remaining steps of the upward secondary trend movements (test = “THREE\_INCREASE”),
- the first 3 steps of the downward secondary trend movements and the remaining steps of the downward secondary trend movements (test = “THREE\_DECREASE”).

The number of observations (secondary trends, number of x and y in the Table 2 respectively) may differ in each round as we have used simulated price movements (random generator) in each round. Thus the price movement each student can observe differ in each round and also the number of secondary trends identified by the usage of zig-zag filter as a consequence. The number of y in “THREE” (and also “THREE\_INCREASE” and “THREE\_DECREASE”) is lower due to the trends with lower than 3 steps. The remaining differences results from the experiment context. E.g. in “INCREASE\_DECREASE” experiment we compare secondary trends (207 secondary trends, thereof 106 upward secondary trends and 101 downward secondary trends). Whereas, we compare first half of each secondary trend with the respective second half of such secondary trend (207 secondary trends, 207 first halves and 207 second halves of the secondary trends) in the “HALF” experiment.

We first verified the hypothesis H<sub>1</sub>: The more complex is the experiment round the more significant are the differences between steering frequencies in different phases of secondary trends. Results of the t tests are presented in the Table 2.





*Table 2: Differences in steering frequencies in rounds R1 and R2 (simulated markets in sideways trend)*

Round	Test	Number of x	Number of y	Mean of x	Mean of y	T Value	P Value
R1	INCREASE_DECREASE	106	101	91,76%	91,14%	0,222	82,42%
R1	HALF	207	207	90,56%	92,22%	-0,756	44,98%
R1	HALF_INCREASE	106	106	91,05%	92,78%	-0,567	57,10%
R1	HALF_DECREASE	101	101	90,04%	91,64%	-0,5	61,76%
R1	THREE	207	184	87,76%	92,65%	-2,029	4,32%
R1	THREE_INCREASE	106	95	88,36%	94,58%	-2,009	4,61%
R1	THREE_DECREASE	101	89	87,13%	90,58%	-0,927	35,52%
R2	INCREASE_DECREASE	98	100	53,81%	56,22%	-0,473	63,64%
R2	HALF	198	198	53,11%	56,77%	-0,899	36,94%
R2	HALF_INCREASE	98	98	51,75%	55,16%	-0,573	56,73%
R2	HALF_DECREASE	100	100	54,45%	58,35%	-0,699	48,56%
R2	THREE	198	170	51,85%	58,47%	-1,577	11,58%
R2	THREE_INCREASE	98	81	53,06%	57,39%	-0,71	47,89%
R2	THREE_DECREASE	100	89	50,67%	59,46%	-1,507	13,37%

Annotation. Test = as defined above, Number of x (number of y) = number of parts (meaning of the part depends on the test) of secondary trend movements in the respective round for all students, Mean of x (Mean of y) = the average value of steering frequency in the relevant parts of secondary trend movements in the respective round for all students, t value = the value of the t-test, p value = the significance level of the t value

For better understanding the values of the Table 2, the interpretation of the first row values is given below. We identified 106 upward secondary trend movements and 101 downward secondary trend movements in the simulated paths of all of 53 participants in round R1. The average steering frequency for all trend movements and all students was 91,76% (for upward secondary trends) and 91,14% (for downward secondary trends). The t-test value is 0,222 and p-value amounts to 82,42% (the difference is not significant)

We can observe that there is a significant difference of steering frequencies in the first 3 steps and the remaining steps of the upward secondary trend movements in the more complex environment of the round R1, what confirms H1. Namely, the students increased the steering frequency as soon as they could observe the upward trend. Such behavior is typical for the investors that follow the market using momentum strategy.

We also verified the next hypothesis H2: The more significant is the trend movement the more significant are the differences between steering frequencies in different phases of secondary trends. The results for the rounds R3 (simulated market in upward trend) and R4 (simulated market in downward trend) are summarized in the Table 3.





*Table 3: Differences in steering frequencies in rounds R3 and R4 (simulated markets in upward and downward trends)*

Round	Test	Number of x	Number of y	Mean of x	Mean of y	T Value	P Value
R3	INCREASE_DECREASE	73	32	53,16%	59,60%	-0,701	48,63%
R3	HALF	105	105	48,56%	61,46%	-2,129	3,44%
R3	HALF_INCREASE	73	73	44,86%	61,59%	-2,393	1,80%
R3	HALF_DECREASE	32	32	56,99%	61,16%	-0,35	72,76%
R3	THREE	105	91	40,63%	55,09%	-2,32	2,14%
R3	THREE_INCREASE	73	72	32,42%	55,29%	-3,319	0,12%
R3	THREE_DECREASE	32	19	59,38%	54,33%	0,36	72,12%
R4	INCREASE_DECREASE	25	70	38,17%	54,81%	-1,955	6,04%
R4	HALF	95	95	48,04%	52,77%	-0,946	34,52%
R4	HALF_INCREASE	25	25	46,80%	30,07%	1,359	18,06%
R4	HALF_DECREASE	70	70	48,49%	60,88%	-2,544	1,21%
R4	THREE	95	86	35,79%	54,04%	-3,443	0,07%
R4	THREE_INCREASE	25	16	42,67%	37,32%	0,367	71,59%
R4	THREE_DECREASE	70	70	33,33%	57,86%	-4,413	0,00%

Annotation. Trial = as defined above, Number of x (number of y) = number of parts (meaning of part depends on the test) of secondary trend movements in the respective round for all students, Mean of x (Mean of y) = the average value of steering frequency in the relevant parts of secondary trend movements in the respective round for all students, t value = the value of the t-test, p value = the significance level of the t value

We can observe the significant differences in students behavior during market upward trend movement and market downward trend movement. Namely, in the first situation the steering frequency is significantly lower in the first half and first three steps of upward secondary trend movements but not during downward secondary trend movements. Students rather tried to sustain the already existing trend. Such behavior characterize also the momentum traders.

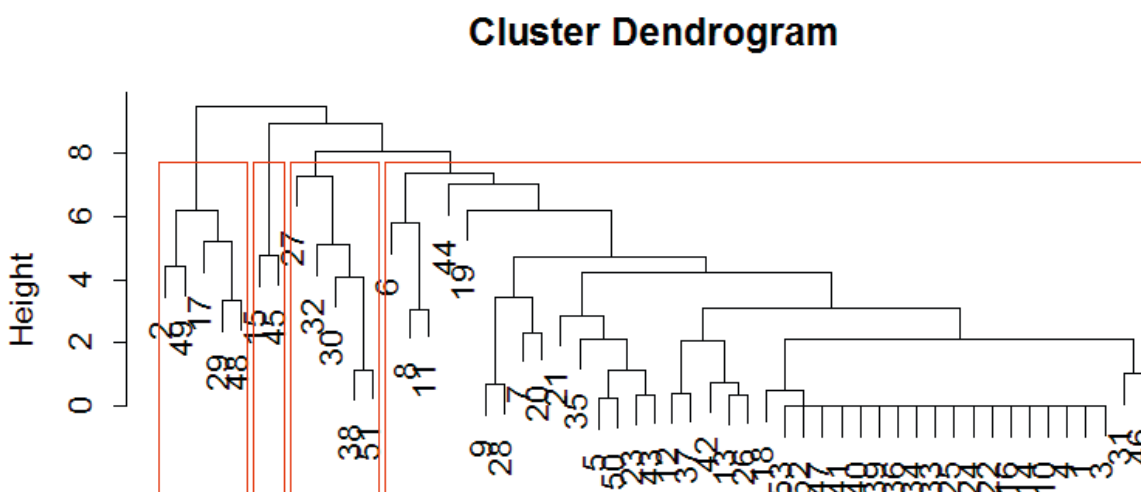
On the contrary in the second situation, during downward trends, the steering frequency is significantly lower in the first half and first three steps of downward secondary trend movements but not during upward secondary trend movements. Students rather tried to reverse already existing downward trend. Such behavior would rather characterize contrarian traders.

## INDIVIDUAL DIFFERENCES

We also analyzed individual differences of students reactions measured by the change of the steering frequency. We have taken into account the data from rounds R1-R4. Missing records (e.g. for the particular simulated price path no secondary downward trend movements have been observed), were imputed with mean values. For the purpose of statistical analysis (Ho Hypothesis) we have assumed that not only the observed steering frequencies of different students but the steering frequencies of the particular student in each secondary trend movement are independent as well.

For each student, round and test we calculated the t-values. In case we could e.g. observe more than one upward secondary trend in one particular round for particular student we calculated the respective mean of observed steering frequencies in different secondary trends and adjusted the variance.

First, we clustered the students using t-values of the all 7 test (listed in Table 2) results of the round R1 as a clustering variables. We also used mahalanobis distance as the dissimilarity measure, (Murtagh and Legendre, 2014). R function hclust of the R base package “stats” was used to identify the cluster number.



Picture 2: Cluster dendrogram for 53 students (test results from round R1 considered).

Having identified the number of clusters the k-means clustering algorithm is applied, (Hartigan and Wong, 1979). The t-values were transformed to the values of the cumulative standard normal distribution beforehand for this purpose.

Results are presented in Tables 4 and 5.

Table 4: Clustering results of k-means procedure – cluster centers

CLUSTER	Number	F1	F2	F3	F4	F5	F6	F7
1	8	32,54%	33,40%	23,87%	55,67%	22,12%	13,35%	52,12%
2	33	50,35%	52,50%	52,62%	50,80%	51,72%	48,95%	52,85%
3	12	63,69%	38,89%	50,21%	34,83%	22,64%	45,97%	19,34%

Annotation. F1-F7 = test results for all test for round R1, Number = number of the students in each cluster.

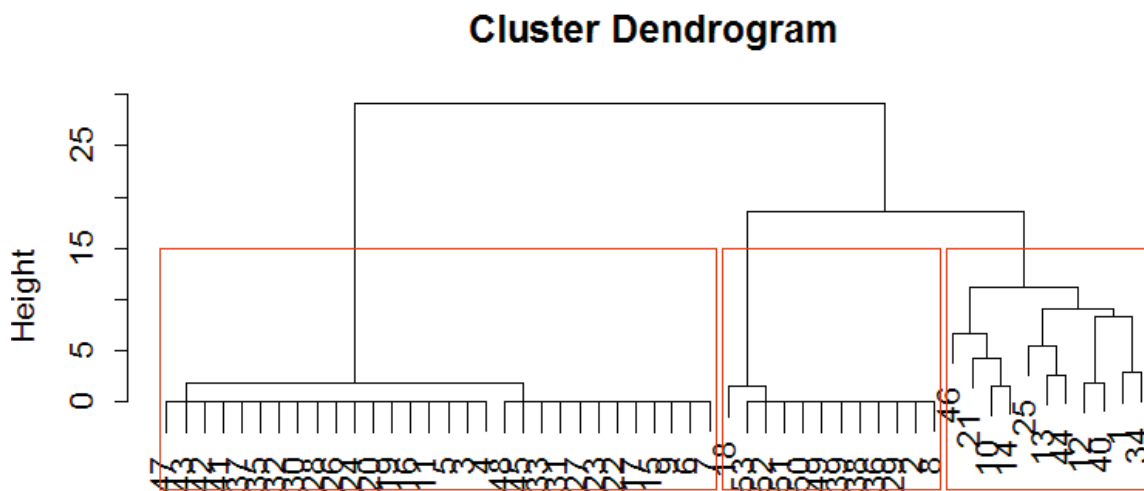
Eg. Value in the row 1 and F1 column states that for the first cluster center the average standard normal distribution cdf value of the standardized difference between steering frequency in the upward secondary trend movements and the steering frequency in the downward secondary trend movements amounts to 32,54%. So that the steering frequency in the upward secondary trend movements was lower than in the downward secondary trend movements .

Generally students in the first cluster react stronger during downward secondary trend movements. They also react stronger in the second half (or in the fourth and later steps) of the upward secondary trend movements. The reactions of the students in

second cluster are very much similar regardless of the secondary trend type (upward or downward) and phase (first half or second half, first 3 steps or forth and later steps respectively). Students in the third cluster reacts stronger during upward secondary trend movements. They also react stronger in the second half (or in the forth and later steps) of the downward secondary trend movements. We could try to characterize the students in the clusters as momentum, noise and contrarian traders respectively. The identification of noise traders is straightforward. We have based our classification into momentum and contrarian traders mainly on the comparison of F<sub>3</sub>, F<sub>4</sub> and F<sub>6</sub>, F<sub>7</sub> variables.

We have conducted the similar analysis based on the other characteristics. We have compared students reactions in all rounds of the experiment (rounds R<sub>1</sub>-R<sub>4</sub>). However we only compared the steering frequencies in the respective upward and downward secondary trends (separately).

Appropriate dendrogram is shown in the Picture 3.



Picture 3: Cluster dendrogram for 53 students (test results from all rounds considered).

Table 5: Clustering results of k-means procedure – cluster centers

CLUSTER	Number	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	F <sub>4</sub>
1	34	47,55%	46,49%	44,82%	42,26%
2	16	50,15%	49,56%	43,99%	53,40%
3	3	47,79%	26,94%	74,53%	50,35%

Annotation. Meaning of variables analogue to the Table 4.

Students in first cluster reacts slightly stronger in downward trends than in upward trends. Students in the second cluster have similar steering frequency in upward and downward secondary trends in case of sideways trend (F<sub>1</sub> and F<sub>2</sub> which correspond to rounds R<sub>1</sub> and R<sub>2</sub>). However they react stronger during downward secondary trends in round R<sub>3</sub> (they want to change negative trend). The number of students in the third cluster is very limited. We have only 3 students in this cluster.

The last analysis we have conducted is based on the following characteristics. We have compared students reactions in all rounds of the experiment (R1-R4) however only for the comparison of the steering frequencies in first halves and second halves of the respective upward and downward movements secondary trend movements (separately). As there were too few downward secondary trends in round R3 and too few upward secondary trends in round R4 we have not used these two features for the purpose of clustering.

*Table 6: Clustering results of k-means procedure – cluster centers*

CLUSTER	Number	F1	F2	F3	F4	F5	F6
1	18	47,67%	45,28%	62,27%	33,61%	20,77%	18,16%
2	5	47,07%	48,71%	28,46%	50,15%	24,97%	78,60%
3	8	41,60%	30,30%	23,46%	67,82%	38,85%	18,62%
4	22	43,35%	50,10%	41,47%	41,88%	46,63%	37,32%

Annotation. Meaning of variables analogue to the Table 4.

The cluster 1 students reacts stronger in second halves of both secondary upward trend movements in upward market (F5) and downward secondary trends in downward market (F6). Cluster 2 students have stronger reactions in second halves of the upward secondary trends and stronger reaction in the first halves of the downward secondary trends in the downward market (F6). Cluster 3 students are similar to cluster 1 students however they reactions differ in sideways trend market (F3 and F4). Cluster 4 students reactions are balanced (noise traders characteristics). Factors F1 and F3 represent short-term recovering markets situation and F5 represents long-term recovering market situation.

Based on the experiment we stipulate that during the short-term recovery phase of the market (represented by first halves or first 3 steps of the upward secondary trend movements) the investors activity will be limited to the mainly students of cluster 1 in Table 6. These students are characterized by very strong reactions to both upward and downward trends. Limited investors activity is expected in long-term market recovery situation.

## INVESTORS ACTIVITY – ANALYSIS OF THE STOCK VOLUME

We have also compared the results of experimental study with investors activity observed on the markets. For this purpose, we have analyzed the trade volume of the selected stock exchanges, using the volume as the proxy for the investors activity. The analysis is very similar to the analysis conducted with experimental data, therefore only the differences will be stated in a more detailed way.

First we identified and analyzed 3 different periods, namely:

- from 2006-08-31 until 2007-08-31 – upward market trend (round = I1)
- from 2011-11-30 until 2012-11-30 – sideways market trend (round = I2)



- from 2007-10-31 until 2008-10-31 – downward market trend (round =I<sub>3</sub>)

We have used the level and turnover data of the following indices: WIG20, WIG, NCINDEX, AEX, BEL20, CAC40, PSI20, DAX, DJIA. The data source was the respective web page of relevant stock exchange (with exception of Dow Jones Index where Standard and Poors web page was used instead).

Instead of the steering frequency we compared the daily average volume in the part of secondary trend movement to the daily average volume in the relevant secondary trend movement. Instead of using the first 3 steps we have used 5 trading days (1 week) of the secondary trend period. It is also worth mentioning that the average of the values in the “Mean of x” and “Mean of y” columns of Table 7 is not necessary exactly equal to 100%. This is a result of mean calculation in case of secondary trend movements with odd number of weeks (the mid week is randomly assigned to either first or second half of the secondary trend movement considered). Due to the same reason the “mean of x” and “mean of y” values can both slightly exceed 100% at the same time. As can be observed in Table 7 for the round I<sub>1</sub> and test HALF\_DECREASE. Similar reasoning is valid for “WEEK”, “WEEK\_INCREASE” and “WEEK\_DECREASE” tests.

Table 7: Differences in volumes

Round	Test	Number of x	Number of y	Mean of x	Mean of y	T Value	P Value
I <sub>1</sub>	HALF	38	38	98,27%	102,12%	-1,411	16,23%
I <sub>1</sub>	HALF_INCREASE	20	20	96,08%	103,90%	-2,545	1,51%
I <sub>1</sub>	HALF_DECREASE	18	18	100,70%	100,15%	0,119	90,57%
I <sub>1</sub>	WEEK	34	34	106,26%	98,86%	1,843	7,34%
I <sub>1</sub>	WEEK_INCREASE	19	19	108,22%	98,89%	1,504	14,96%
I <sub>1</sub>	WEEK_DECREASE	15	15	103,77%	98,84%	1,04	31,04%
I <sub>2</sub>	HALF	51	51	98,08%	101,39%	-1,652	10,16%
I <sub>2</sub>	HALF_INCREASE	27	27	94,37%	104,75%	-3,201	0,23%
I <sub>2</sub>	HALF_DECREASE	24	24	102,25%	97,60%	2,921	0,54%
I <sub>2</sub>	WEEK	40	40	107,29%	98,88%	2,277	2,78%
I <sub>2</sub>	WEEK_INCREASE	20	20	103,45%	98,32%	1,005	32,58%
I <sub>2</sub>	WEEK_DECREASE	20	20	111,14%	99,43%	2,193	4,01%
I <sub>3</sub>	HALF	139	139	101,36%	99,06%	0,691	48,99%
I <sub>3</sub>	HALF_INCREASE	62	62	102,54%	97,92%	0,779	43,74%
I <sub>3</sub>	HALF_DECREASE	77	77	100,41%	99,98%	0,117	90,68%
I <sub>3</sub>	WEEK	83	83	127,93%	94,66%	2,612	1,06%
I <sub>3</sub>	WEEK_INCREASE	33	33	127,82%	93,42%	2,382	2,19%
I <sub>3</sub>	WEEK_DECREASE	50	50	128,01%	95,47%	1,713	9,29%

Annotation. The meaning of variable analog as in Tables 2 and 3.

To summarize, we can observe that during upward market trend (I<sub>1</sub>) investors react stronger in the second half of the upward secondary trend movement. In the sideways market trend (I<sub>2</sub>) investors react stronger in: the first week of any secondary market trend, in the first half of the downward secondary trend and in the second half of the upward secondary trend. In the downward market trend (I<sub>3</sub>) there is very strong reaction of the investors in the first week of both upward and downward secondary trend.

We can also observe that real investors react faster to the changing market situation (especially during sideways and downtrend trends). Therefore we can expect increase of the investors activity in recovering markets. However not all the markets behave in the similar fashion. Results of the single market analysis are presented in the Appendix in Table 7.

## DISCUSSION AND FURTHER RESEARCH

We have observed both in the experiment and on the real stock exchanges that there is the heterogeneity of investors' activity (on individual and market levels). Such heterogeneity may explain some of the volume variation.

Secondly we can observe that the markets adopt faster and in a more flexible way to the price changes than the students observed in the laboratory during the experiment. Such observation can be caused by inclusion of other than information on the past prices in the decision process, higher level of expertise and experience of professional investors than of the students.

However we believe that such laboratory experiments can give better insights into investors behavior and enable deeper analysis of psychological features and personality traits as e.g. overconfidence that influence the investors activity. This will however be the subject of the further research.



## APPENDIX

Table 7: Differences in volumes for single markets (only significant results)

NAME	Number of x	Number of y	Mean of x	Mean of y	T Value	P Value
AEX_I1_WEEK_INCREASE	2	2	141,21%	95,81%	23,371	0,48%
AEX_I3_HALF_DECREASE	11	11	93,33%	109,39%	-2,876	1,08%
AEX_I3_HALF_INCREASE	7	7	107,89%	91,46%	3,105	0,91%
AEX_I3_WEEK_DECREASE	5	5	94,84%	101,14%	-2,967	3,74%
BEL20_I1_HALF_ALL	4	4	91,86%	108,00%	-4,057	0,67%
BEL20_I1_HALF_INCREASE	2	2	87,13%	112,59%	-30,115	0,29%
BEL20_I3_HALF_DECREASE	14	14	96,17%	105,00%	-2,113	4,60%
BEL20_I3_HALF_INCREASE	8	8	108,70%	91,90%	3,066	0,84%
BEL20_I3_WEEK_INCREASE	4	4	121,41%	91,74%	3,505	2,40%
CAC40_I1_HALF_INCREASE	3	3	93,74%	106,23%	-9,227	0,08%
CAC40_I1_WEEK_ALL	5	5	125,95%	95,03%	3,742	1,20%
CAC40_I2_WEEK_ALL	6	6	115,19%	98,26%	2,95	3,06%
CAC40_I3_HALF_ALL	18	18	104,10%	95,57%	2,237	3,19%
CAC40_I3_HALF_INCREASE	8	8	112,99%	86,17%	6,853	0,00%
DAX_I3_HALF_DECREASE	5	5	85,81%	115,94%	-4,066	0,47%
DAX_I3_WEEK_DECREASE	4	4	89,29%	103,18%	-3,792	2,07%
DJIA_I2_HALF_DECREASE	2	2	95,60%	104,77%	-5,32	3,44%
DJIA_I2_HALF_INCREASE	2	2	104,57%	95,41%	9,713	1,12%
DJIA_I2_WEEK_DECREASE	2	2	78,24%	105,48%	-30,76	0,71%
DJIA_I3_HALF_DECREASE	10	10	90,94%	107,88%	-4,422	0,03%
DJIA_I3_HALF_INCREASE	6	6	110,61%	89,15%	4,352	0,14%
DJIA_I3_WEEK_INCREASE	3	3	123,44%	90,72%	5,784	0,99%
NCINDEX_I3_HALF_DECREASE	7	7	125,22%	75,07%	2,67	2,04%
NCINDEX_I3_HALF_INCREASE	5	5	63,43%	133,54%	-2,79	2,39%
PSI20_I1_HALF_DECREASE	2	2	112,53%	88,63%	6,602	2,74%
PSI20_I2_HALF_DECREASE	5	5	104,72%	94,39%	2,855	2,28%
PSI20_I2_WEEK_ALL	7	7	122,95%	92,58%	3,175	1,34%
WIG_I2_HALF_INCREASE	2	2	89,80%	110,08%	-5,037	3,74%
WIG20_I2_HALF_ALL	7	7	94,75%	105,31%	-2,229	4,57%
WIG20_I2_HALF_INCREASE	4	4	89,96%	110,13%	-4,574	0,38%



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# Choice of Accounting Basis in Function the Quality of Financial Reporting in the Public Sector

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## *ABSTRACT*

Transparent and accountable use of public funds after the global economic crisis is increasingly gaining importance and the fulfillment of these requirements is largely dependent on the financial reporting system. The volume of information received through the financial reports on the public sector is significantly influenced by accounting basis applied. In this paper we will describe characteristics of each of the accounting basis, which are possible to use in the financial reporting of the public sector the current representation of each of them in the world and the impact of the selected basis on the quality of financial reporting. In addition to this, the paper presents the results of empirical research conducted on the territory of the Republic of Srpska in connection with the application of different accounting basis and the impact on the quality of financial reporting.

*Key words:* **quality of financial reporting, public sector, accrual basis, cash basis, modification basis, managing public finance**

## INTRODUCTION

Public finance management is a complex and responsible job, which carries a high level of risk and a number of implications on the economic, social and political relations. For making decisions about source, amount and intensity of the collection of public funds as well as the manner of their spending it is necessary to have a good information base, apropos a high quality of financial reporting system. The worldwide economic crisis has highlighted the importance of accountable and transparent public spending, especially in light of the deteriorating fiscal position and public debt (Annual conference about international trends of public sector accounting reform, Ljubljana, 2011).

The system of financial reporting in the public sector<sup>1</sup> involves collecting, recording, processing and presentation of information about the activities of the government and its institutions during the reporting period. The data generated by the financial reporting system is an input of the system while the financial statements in which information is presented can be observed as an output of the system. All reports arising through the financial reporting system, primarily referring to the set of financial statements consisted of a balance sheet, income statement, cash flow statement and statement on changes in equity and notes on the financial statements should together provide relevant and reliable information to assist decision-makers in implementing activities.

The aim of the financial reporting in the public sector is that to users of financial statements be provided with sufficient information for making future decisions, but also to analyze the results of the previous decisions taken and to what extent will this aim achieve depends primarily on the quality of the financial reporting system. The quality of financial reporting system depends on several factors; one of the basic choices is adequate accounting basis for recording incurred events.

Accordingly to the subject, this paper will consider the impact of different accounting basis to the amount and relevance of the information through the general-purpose financial statements provided to the users and thus on the quality of financial reporting in the public sector.

## CHARACTERISTICS OF ACCOUNTING BASIS IN THE PUBLIC SECTOR

The accounting basis of an organisation's budget and financial statements depends on when these transactions are recognised; which revenues, expenses, assets and liabilities are recognised; and what measurement and valuation basis are then applied to all of the amounts so recognised (Jones, 2010). Basis are ranged from full cash to full accrual basis and there are several variants that represent a combination of these two models, mostly mentioned modified accrual and modified cash basis.

While in the private sector accounting, according to international accounting standards, allows to use only one accounting basis and that is full accrual basis in accounting for the public sector for general-purpose financial statements that are currently able to

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<sup>1</sup> According to International public sector accounting standards (IPSAS), the term public sector include the general government sector (budget users), but it does not include public companies. Public companies, due to their profit orientation and similarities with companies in the private sector are not within the IPSAS and that public sector classification we will use for the purpose of this paper.



be used as cash and accrual basis (as well as above mentioned modification of the two basis). Budget reports can compile using the same accounting basis as well as for general-purpose financial statements, but it is not required.

## THE CASH BASIS OF ACCOUNTING

Using the cash accounting basis means recognition of the transactions or events only when there has been an inflow or outflow of the money, i.e. at a time when cash or its equivalent received (charged) or issued (paid). For example, providing services to users would be recorded at the moment of payment when it comes to cash inflow in the entity and not at the moment of providing service unless these two moments in time differ.

Accordingly to that, the elements of financial statements would be cash receipts, cash disbursements and cash balances. Receipts and disbursements in public sector include cash inflows and outflows from taxation, provision of goods and services, paying and charging services or gaining some type of property, equipments and investments; and borrowing and other financial transactions (Study 2: Elements of the Financial Statements of Nacional Governments, 1993). It is possible to classify the inflows and outflows in order to emphasize the importance of the major components, source or purpose. General-purpose financial statements prepared under the cash basis, would include: cash flow statement and notes.

In the public sector, in addition to general-purpose financial statements the subject presents information of budgetary types, namely the reports of individual budget users, primarily Report on Budget Execution.

The application of this basis is still largely present and the main reason pointed out is the usefulness for monitoring expenditure of funds in relation to the planned, which presents the starting point for determining future requirements and ongoing supervision over the collection and spending of public money. In addition, concentration of the only one form of assets, i.e. money, as well as monitoring and recording only the changes that occur in connection with money is quite simple to implement.

However, data on cash provided by cash basis may be relevant only for certain decisions but insufficient for evaluating the efficiency of the allocation and management of scarce resources entrusted to the government and its institutions to achieve their goals (Poljašević, 2009).

From the point of control for current liquidity, or to analysis the ability that current budgetary inflows meet current needs for budgetary funds, the information that provides cash basis could be considered adequate. However, management of the public funds, in the mode that the budget takes as much as possible developmental character, requires long-term viability planning. For accounting purposes it includes monitoring and recording not only transactions that result in cash inflows and outflows in a single budget period, but also those long-term impact on the financial position and success on entity reports and ability to consistently generate cash with which it is possible to finance current and capital budget expenditures (Šnjegota, 2009). The use of the cash basis, because of the fact that not all events that accrued it that period are recorded prevents the presentation of the report on financial position, results on achieved operations, performance indicators as well as the costs of providing services

## THE ACCRUAL BASIS OF ACCOUNTING

The full accrual basis (accrual basis) recognizes transactions when they happened, regardless of whether it is at the moment an inflow or outflow of money, and it bases on the strict application of accrual accounting principles. In this way, it is possible to monitor not only monetary situation in the entities but also the assets and liabilities. The basic elements of general-purposes financial statements resulted by accrual accounting are assets, liabilities, net assets, revenues and expenses. It is possible to classify



assets on current and non-current, liabilities on long-term and short-term, revenues and expenses based on sources from which they originate etc. By using the accrual basis of financial report can be use to see entire the property, which the entities have likewise as obligations. Without such information, we cannot realistically examine the financial conditions of government and its institutions. Although the international accounting standards for public sector and one standard that supports cash basis they essentially are based on the use of the accrual basis.

Set of general-purposes financial statements, assembled using the accrual basis includes the following individual reports: statement on financial position at the end of the period - balance sheet, statement on profit or loss and other comprehensive income for the period - income statement, statement on changes in equity for the period, cash flows statement for the period and notes.

Besides the general-purposes financial statement it is also presented information on budget type, precisely reports on individual budget users primarily the Report on Budget Execution.

The main advantage of using the full accrual basis is comprehensiveness of all transactions at the time when they actually occurred. It also provides an overview, not only cash balances and cash transactions, but the state of non-financial assets, liabilities, equity, revenue and expenses. However, as a basic lack of the accrual basis points out the complexity of the system and the need of greater knowledge to understand to those that the information provided and additional explanations managers and users who are not familiar with the basics of accounting and financial reporting.

## THE MODIFIED CASH BASIS OF ACCOUNTING

Using a modified cash basis requires that transactions and events that occurred at the end of the year be in that year recognized if it is expected to result cash receipts and/or expenditure within a short period after the end of the year (Study 1: Financial reporting by National Governments, 1991). Simply, it is an extension of the reporting period that is recognition of financial transactions after the end of the year for, which the financial report drawn up. After the expiration of the observed year in the frame where the transaction is recognized as it has happened during the report year is often referred to as "specific period" (usually 30 to 60 days after the end of the year). Within this period, inflows and outflows of money that relating to the reporting period are recognized in the accounting which is based on the application of accrual basis, and the books will remain open until it is completed and the specific period.

For the consistent implementation of the modified cash basis it is important that during a specific period adhere to certain rules (Study 11: Government financial reporting by Nacional Governments, 2000):

- The specified period most not change from year to year,
- All inflows and outflows is necessary to include in the same way,
- The optimal duration of approximately thirty days, considering that in this period usually ends the cycle of business transactions and the problem is in the timeliness of monitoring the current year because of previous accounts, which have not yet been closed. In addition, more specific period brings into question the timeliness of information in the financial reports,
- The accounting policies applied in the specific period should publish in the accounting policies and notes to the financial reports,
- Receipts and expenses incurred during a specific period, and refer to the current (not reporting) year generally are not included in the reports for the year in relation to a specific period.



As examples of receipts incurred during a specific period, which relate to the reporting period (and which are in accordance with the modified cash basis, revenues are recognized as receipts of the reporting period) may be given on the basis of income tax relating to the reporting period, payment for services rendered or sell products which occurred in the reporting period, the inflow of loans agreed during the reporting period and similar.

While on the expenditure side can be found refund of tax collected during the reporting period, the payment for purchases made in the reporting period, assistance for anything (or on the occasion of) the decision was made during the reporting period and similar.

The modified cash basis involves assembling the same financial statements as full cash base and its advantage over the concept that modifies the reflection in a wider coverage of financial assets and confrontation inflows and outflows related to the same accounting period, although some of them actually incurred after the expiration of the observed year. However, it would constitute a lack in relation to the cash basis with respect to the introduction of a specific period of losing the simplicity that has a pure cash basis. Other advantages and disadvantages listed for a full cash basis also apply to the modified cash basis.

## MODIFIED ACCRUAL BASIS OF ACCOUNTING

The modified accrual basis presents a deviation from the consistent application of the full accrual basis, which results in a certain variation in relation to the full accrual basis, which depends on the primary objective of financial reporting. Compared to the full accrual basis, modified accrual basis often means different treatment in terms of revenue recognition. Specifically, under the modified accrual basis, revenues are recognized in the accounting period in with they become available and measurable – in other words, when they can be spend for ongoing operations, while under the accrual basis revenues are recognized when earned, usually when the earnings process is complete (Douglas, 1995). Under the accrual basis, revenues normally do not have to be available. The most common examples of modifications accrual basis are reflected in the following (Study 11: Government financial reporting by Nacional Governments, 2000):

- Solid concept that express physical assets are exempt means of defense, infrastructure assets, funds culture and natural heritage. These types of assets are recorded as an expense at the time of acquisition and legacy of exclusion is done for practical reasons, because their value is priceless.
- Almost all of the assets are capitalized and liabilities are recorded at the time of occurrence, but revenue is recognized on the basis of cash concept or at the time of collection,
- As assets are recognized and reported only short-term financial assets and current liabilities,
- From the total liabilities excluding some general obligations, such as pension obligations, etc.

Use of the modified accrual basis implies the drawing up of all financial statements that are prepared with the use of full accrual basis. However, criteria for recognition of elements of financial reports are modified and are put in a note together with the financial statements requiring more detailed explanation of the accounting policies and disclosure of elements of financial reports due to the modification of the accrual basis are not found in other reports. For ease of understanding and time comparisons of financial reports in accounting policy should be applied consistently, and changes should be disclosed.

An advantage of the modified accrual basis in relation to the modified cash and cash basis are reflected in comprehensive coverage and provides a wide range of information to the users of financial reports. However, compared to the full accrual basis, which involves recording all transactions incurred regardless of how the assets, liabilities, revenues or expenses classified, any



modification or selective approach to recognition of elements of financial reports can be regarded as a weakening in terms of objectivity, transparency and completeness of the financial statements.

*Table 1: Recognition of elements of financial statements by applying different basis of financial reporting (Study 2: Elements of the Financial Statements of Nacional Governments, 1993)*

Cash Basis	Modified Cash	Modified Accrual	Full Accrual
<b>ASSETS</b>			
Cash Balances	Cash Balances + Accounts receivable within X days	Financial assets	Financial assets + Physical assets + Infrastructure assets + Other assets
<b>LIABILITIES</b>			
	Accounts and transfer payments payable within a specified number of days	Accounts Payable + Transfer payments payable + Accrued liabilities (e.g. employee pension obligations and accrued interest)	Accounts Payable + Transfer payments payable + Accrued liabilities (e.g. employee pension obligations and accrued interest)
<b>RECEIPTS / REVENUES AND EXPENDITURES / EXPENSES</b>			
Recognize when cash received	Recognize when it is likely that cash will be received within X days	Recognize when the underlying transaction or event occurs	Recognize when the underlying transaction or event occurs

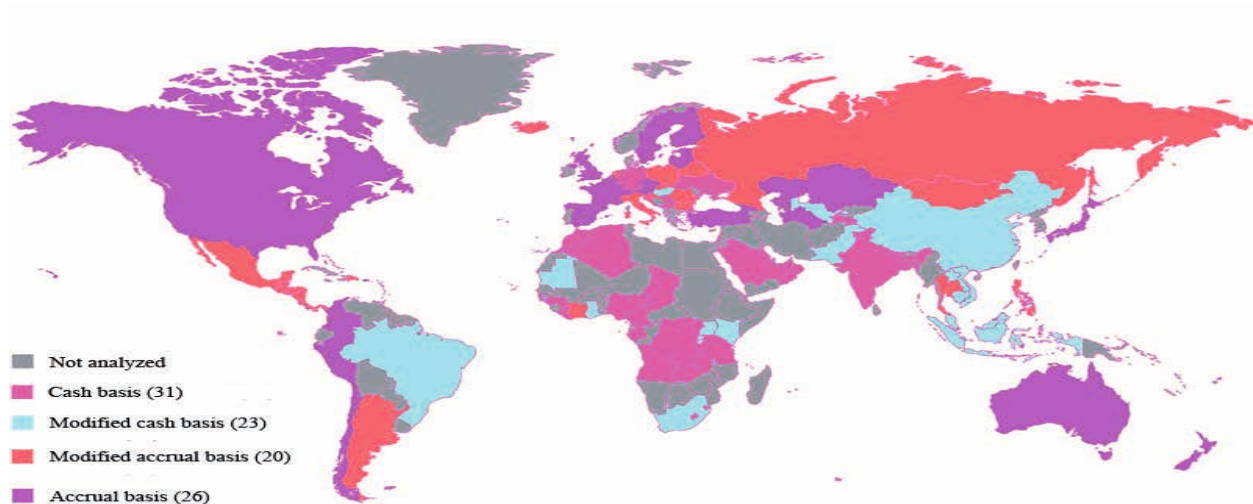
## REVIEW REPRESENTATIONS ACCOUNTING BASIS IN THE PUBLIC SECTOR

Although currently in the world a more countries that in reporting use cash basis and there is a noticeable trend towards the use of the accrual basis and is anticipated that in a very short time accrual basis become the preeminent basis in the financial reporting of the government and its units. According to a survey conducted by Price Waterhouse Coopers, covering 100 countries around the world, which was completed in April 2013, the results show that 54% of countries in the analyzed sample are using cash or modified cash basis, while the accrual basis or modified accrual basis is represented in 46% of countries. According to the same survey, over the next five years, 37 countries showed a tendency to move to the accrual basis, which represents an increase of 142%, which would become the dominant accrual basis financial reporting basis in the public sector (Global survey on accounting and reporting by central governments: Towards a new era in government accounting and reporting, 2013). However, it should be noted that the switch from cash to accrual basis is a process that cannot be quick and easy to complete. It is a process, which duration usually is two or more years, which requires a complete change to financial reporting where process of changes in legislation proceed and other adjustment to the new conditions. Figure no. 1 provides an overview of the state and the basis of which they applied at the time of the survey.





*Figure 1:* Using the accounting basis in the public sector in the world (Global survey on accounting and reporting by central governments: Towards a new era in government accounting and reporting, 2013)



European countries that first started to use accrual basis are Denmark, Finland and Portugal (Vašiček, 2012).

Looking at state around the environment in Bosnia and Herzegovina the Republic of Srpska adopted the use of full accrual accounting<sup>2</sup> and the mandatory application of IPSAS in respect of the general-purposes financial statements. In the Federation of Bosnia and Herzegovina there is an act, which prescribes the application of IPSAS but in practice it does not apply and the financial reports based on the application of the cash basis on financial report. In Serbia, also applies cash basis of financial reporting and the law specifies mandatory compliance with the requirements and guidelines of IPSAS on a cash basis, while in Croatia presents the application of the modified accrual basis in financial reporting, while IPSAS are not accepted, nor are there national standards. Macedonia has not yet adopted the accrual basis, as well as Slovenia, which currently uses a cash basis (with some elements of accrual basis).

## THE BASIS OF ACCOUNTING AS A DETERMINANT OF FINANCIAL REPORTING QUALITY

The quality of financial reporting depends primarily on qualitative characteristics of information that coming out of the system. The qualitative characteristics of financial information are characters that should have information that are relevant to users. Four main qualitative characteristics of information from the financial reporting system are (Appendix 2: The qualitative characteristic of financial reporting, 2004): understandable - information is understandable when expect that the users understand its meaning;

<sup>2</sup> Since the first on January 2013 Republic of Srpska has adopted full accrual basis for financial statements of general purposes, while for budgetary reporting uses modified accrual basis.

relevance - the information is relevant if it suits the purpose for which it is required for the user and if it is available at the right time; reliability - is reflected in its authenticity, completeness, neutrality and verifiability; comparability of information is their qualitative characteristic which implies the possibility of drawing conclusions and making decisions based on the ability of mutual comparison of information, how information during different periods of the same reporting entity and comparison of information from one reporting entity information other reporting entities with respect to the same time period and the same object.

High quality financial reporting system should ensure that the information which is coming out of the system has all the qualitative characteristics that user's request. In order to achieve this, the system must be organized in a way to capture process and present any relevant evidence.

In financial reporting of public sector, it means among other things the choice of appropriate accounting basis that directly affects on the amount and type of information that will be presented to the financial statements. Use adequate basis depends on the information that they want to emphasize in the financial statements. For example, financial reporting may focus on reporting (Study 2: Elements of the Financial Statements of Nacional Governments, 1993):

- Cash flows and balances (and change therein) – to provide users with information about the source of cash raised during the period, the uses to which cash was applied and the cash balances at reporting date (the cash and modified cash bases);
- Current financial resources (and change therein) – to provide users with information about cash flows during the period, those liabilities that must be met within a short period form reporting date and current cash balances and receivables available to meet those liabilities (the modified cash basis);
- Total financial resources (and change therein) – to provide users with information about liabilities, the financial assets available to meet those liabilities and the amount and sources of the period's revenues and expenditures, as input for assisting future funding requirements and the likely sources of that funding (the modified accrual basis);  
or.
- Economic resources (and change therein) – to provide users with information about assets, liabilities, revenues, expenses and net assets for use in assisting financial position and changes therein and whether the reporting entity is operating economically and efficiently (the accrual base).

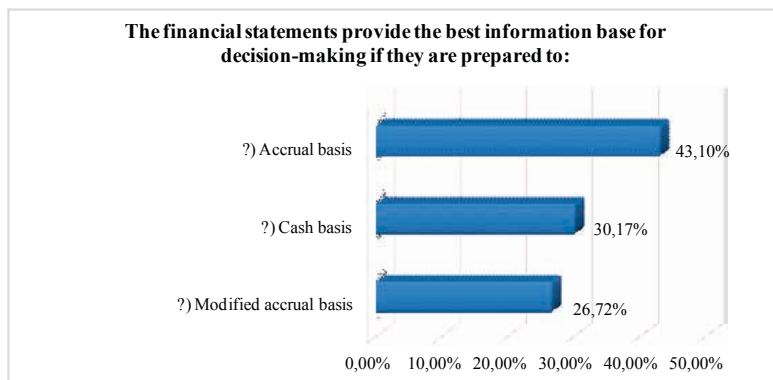
## RESULTS OF EMPIRICAL RESEARCH

Empirical research about that which basis of accounting for the general-purpose financial reports in the public sector provides more information for the users of financial reports and financial reporting, wherefore it makes a better quality of the system, was done through questionnaires intended for accountants employed in the public sector in the Republic of Srpska, because they know very well the reporting system and thus the scope of information obtained from the system. Except the questionnaire, will be used the methods of analysis and comparison to the illustrated example of a budget user to demonstrate any influence on the financial statements of the application of different accounting basis. The modified cash basis will not be subject to special consideration since a modification in relation to the cash basis related to the extension of the reporting period, while the conditions for the recognition of accounting categories remain the same. The questionnaire was done in the 2014 and was completed by 116 people and the results are given below.



The first question was: Financial statements provide the best information base for decision-making if they are composed according to: a) accrual basis, b) a cash basis and c) a modified accrual basis. For accrual basis opted 69.83% respondents of whom 43.10% of them believe that the full accrual basis provides the best information base for decision-making in the public sector and 26.72% of them considered that the modified accrual basis of the better regarding in this case, while 30.17% respondents given advantage to the cash basis accounting.

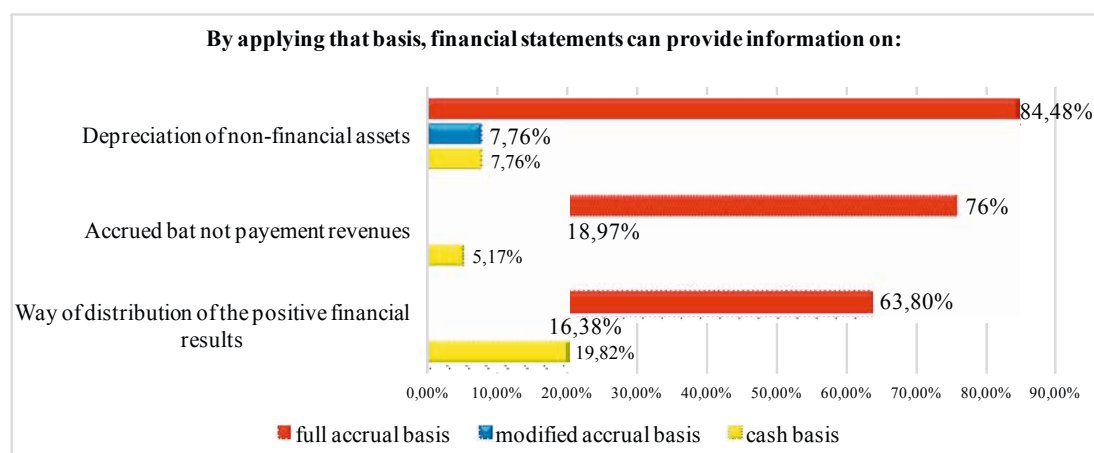
*Graph 1:* The best basis for financial reporting as an information base for decision-making in public sector



Source: Authors analyze

In connection with the information obtained from the financial statements the following question are: Which application of accounting basis related to financial statements can provide information about depreciation of non-financial assets, accrued but not charged revenues and the way of distribution of the positive financial results.

Graph 2: The information obtained by applying different accounting basis



Source: Authors analyze

Based on these questions the conclusion is that the majority of respondents gives advantages to full accrual basis, as a basis whose application provides the most information for decision making.

How could we confirm the previous consultation? We will use an illustrated example in which we will show how a financial statements looks like in the general government sector of the Republic of Srpska if they are fully applying according to the accrual basis, modified accrual basis and cash basis. The modification of the accrual basis compared to the full accrual basis would imply a difference in the recognition of revenue. According to the modified accrual basis revenues would be recognized when a cash flow happens, while the full accrual basis would mean recognition of revenue when they are earned regardless whether in that moment it came to an inflow of money or not.

Take for example following situation - at the beginning of the period the reporting entity had the following assets and liabilities: land 800.000 BAM<sup>3</sup>, buildings 1.500.000 BAM; equipment 500.000 BAM; securities available for sale 50.000 BAM; liabilities from long-term loans 1.000.000 BAM; bank account 100.000 BAM; net assets 1.950.000 BAM. Then the following changes happened:

1. Receivables determine on real estate tax (property tax) for 60.000 BAM. Payers are informed about their obligation. In the reporting period inflow based on it was 30% of amount;
2. Received a bill for the electricity consumed in amount of 585 BAM including VAT. The total account is paid;
3. Accrued and paid a gross salary of 88.415 BAM;
4. Receivable from the lease is 12.000 BAM. Receivable was billed 12.000 BAM;
5. Accrued depreciation on buildings for 2.000 BAM and the depreciation on transport vehicle for 1.000 BAM;
6. Increased value-for-sale securities and it is now 60.000 BAM.

<sup>3</sup> Convertible mark (KM) is the official currency of payment in Bosnia and Herzegovina. International Banking Code for the Convertible mark is BAM. 1 EUR = 1.955830 BAM or 1 BAM = 0.51129 EUR.



By using the full accrual basis, financial statements would look as follows:

BALANCE SHEET			
ASSETS		LIABILITIES AND OWNER'S EQUITY	
ASSETS		LIABILITIES	1.000.000
<i>A) Current assets</i>	<i>143.000</i>	Long-term debt	1.000.000
Bank account	41.000	OWNER'S EQUITY	1.940.000
Securities – value for sale	60.000	Permanent sources of assets	1.950.000
Receivables	42.000	Loss of current year	-10.000
<i>B) Non-current assets</i>	<i>2.797.000</i>		
Land	800.000		
Buildings	1.500.000		
Accumulated depreciation of buildings	-2.000		
Equipments	500.000		
Accumulated depreciation of equipment	-1.000		
<b>TOTAL ASSETS</b>	<b>2.940.000</b>	<b>TOTAL LIABILITIES AND EQUITY</b>	<b>2.940.000</b>

INCOME STATEMENTS			
EXPENSES		REVENUE	
CURRENT EXPENSES		<i>TAX REVENUE</i>	
Gross wages and gross salaries	88.415	Real estate tax	18.000
Electricity expenses	585	<i>NON-TAX REVENUE</i>	
ACCRUAL EXPENSES CHARACTER		Lease	12.000
Depreciation	3.000	<i>ACCRUAL REVENUE CHARACTER</i>	
		Revaluation of short-term financial assets	10.000
		Other accrual revenue	42.000
<b>TOTAL EXPENSES</b>	<b>92.000</b>	<b>TOTAL REVENUE</b>	<b>82.000</b>
		Loss	10.000

CASH FLOW STATEMENT			
<i>CASH BALANCE FROM OPERATING ACTIVITES</i>			- 71.000
Inflow :			
Inflow based on real estate tax			18.000
Outflow:			
Outflow based on electricity cost			585
Outflow based on wages, salaries			88.415
<i>CASH BALANCE FROM INVESTIG ACTIVITES</i>			12.000
Inflow based on lease			12.000
<i>CASH BALANCE FROM FINANCING ACTIVITIES</i>			0
NET CASH BALANCE			-59.000
CASH AT THE BEGINNING OF REPORTING PERIOD			100.000
CASH AT THE END OF REPORTING PERIOD			41.000

In the reports on changes of capital units the only change was transfer of the results the loss of 10.000 BAM.

The financial reports composed using modified accrual basis for financial reports would look as following:

BALANCE SHEET			
ASSETS		LIABILITIES AND OWNER'S EQUITY	
ASSETS		LIABILITIES	1.000.000
<i>A) Current assets</i>	<i>143.000</i>	Long-term debt	1.000.000
Bank account	41.000	ACCRUALS	42.000
Securities – value for sale	60.000	OWNER'S EQUITY	1.898.000
Receivables	42.000	Permanent sources of assets	1.957.000
<i>B) Non-current assets</i>	<i>2.797.000</i>	Loss of current year	-59.000
Land	800.000		
Buildings	1.498.000		
Equipments	499.000		
<b>TOTAL ASSETS</b>	<b>2.940.000</b>	<b>TOTAL LIABILITIES AND EQUITY</b>	<b>2.940.000</b>

INCOME STATEMENTS			
EXPENSES		REVENUE	
CURRENT EXPENSES		TAX REVENUE	
Gross wages and gross salaries	88.415	Real estate tax	18.000
Electricity expenses	585	NON-TAX REVENUE	
		Lease	12.000
		TOTAL REVENUE	30.000
<b>TOTAL EXPENSES</b>	<b>89.000</b>		
		Loss	59.000

Cash flow reports will remain the same because it only tracks the inflows and outflows of the cash. In the reports of changes in equity, expect transmission loss, which now totals 59.000 BAM we can note an increase in permanent source of assets in amount of 7.000 BAM. This increase is the result of an increase in stock market value of securities of 10.000 BAM and reduction of depreciation of 3.000 BAM. These changes by using the modified accrual basis can be recorded directly through permanent funding sources and not as revenue or expense because it does not lead to the inflow/outflow of money. The amount of unbilled income taxes on immovable that is using this accounting base does not meet the requirements to be recognized as revenue taking in consideration that it did not come to an inflow, therefore this transaction is recorded over accounts of accruals.

Financial statements composed using the cash basis include only cash flow statement and notes to the financial reports, while the balance sheet, income statement and statement on changes in equity are not composed.

According to the presented example composed using the cash basis shows that we will lose data regarding all forms of property, except cash assets. Without composing balance sheet and the income reports in the general-purpose financial reports there are no data on the value of land, buildings, equipment, receivables, as well as there aren't any liabilities. Cash flow statement provided the data on inflows and outflows during the period, as well as the cash position at the end of the period.

By using modified accrual basis took into account all incurred changes, but their recording and classification does not correspond to the nature of the transaction. Revenue observed that the reporting entity is realized on the basis of property tax is shown in the income reports only in the amount which is collected, while not collected amount shown in the balance sheet in the form of accruals. The income statement that presents an overview of all revenues and all expenses, shows only expenses that have led or will lead to an outflow of money (excluding depreciation) and only revenues that are collected during the reporting period. The balance sheet does not show clearly data on the basis of which there was a reduction of building and equipment and there is no indication as to whether these are new assets or assets that will soon be depreciated and written off.





By using the full accrual basis in composing the financial statements are taken into account all transactions that are recorded and categorized according to their nature. The balance sheet shows all reductions and an increase in assets and sources of assets. In relation to the other basis a amendment is shown on depreciations on fixed assets which provided information on the purchase value (cost price) of a fixed asset that is a subject of depreciation, amount of depreciation and on the amount of the present value of fixed assets on which we can plan when would be the next purchase of necessary fixed assets. Revenues are shown in the full amount to which they incurred and over the accounts of receivables is shown the amount of revenue which is not collected what is a useful information on the management of public revenues, as it provides an answer to how the government or its institutions should borrow less, that all revenues are collected or in what extant is it possible to invest more in certain areas (health, education ...) if all citizens pay taxes that were required.

Financial reporting in the public sector of the Republic of Srpska today characterizes using the full accrual basis for composing general-purpose financial statements and using the modified accrual basis for composing budget reports, as well as the use of IPSAS. Republic of Srpska has begun for the first time to apply according to IPSAS since 2006 and the adoption a new layout on chart of accounts in 2011, which objectively created new conditions for the use of all, applicable in that time of IPSAS. The establishment of accrual accounting, based on the full application of IPSAS enabled a good use of statistical models on financial reporting (Government Finance Statistics - GFS, and the European System of Accounts - ESA). Using different accounting basis for the general-purpose financial reports (full accrual basis) and budget reports (modified accrual basis - expenses on an accrual basis and income on a cash basis) allows the income report to present all revenues and expenses incurred and for budgeting needs are taken into account all expenses incurred and only those revenues that are collected.

## CONCLUSION

For recognition and recording transactions in the public sector we can use the cash basis, modified cash basis, modified accrual basis or a full accrual basis. The application of a cash basis may be a good basis for financial reporting if the goal is to provide monitoring of changes on only one form of property and that is money considering that the transaction is recognized only when there was an inflow or outflow of money.

However, the financial statements on the public sector should provide information on the effectiveness of management resources that are under their control, which with the use of the cash basis is not achievable. There is a wide range of users of the financial reports in the public sector and many of them are interested on moving to other types of assets, liabilities, net assets, revenues and expenditures, especially after the global economic crisis. The only basis which will really include all the changes is a full accrual basis and it is clearly noticeable trend towards the use of this base and it is becoming an integral part of reforms in the public sector.

Accrual basis in recording transactions and the compose of general-purpose financial reports gives a more comprehensive and realistic view of the financial, property and yield position of the entity, increases the transparency of accounting information, contributing to faster economic growth and allows a better assessment of the sustainability of fiscal policy as well as the application of indicators to evaluate the performance and activities of entities and the management.

However, it should be in mind that the transition to implementation of full accrual accounting is complex and time-consuming task, which should be preceded by a well-established system of financial reporting on cash or even better a modified accrual basis in order to take all advantage that the full accrual basis provides.



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# Understanding Management Concepts Through Development of Their Tools: The Case of Total Quality Management

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## *ABSTRACT*

In the paper the alternative approach to define the management concept is given. The proposed methodology relies on the identification of tools supporting the given concept/philosophy. The author assumed that identification of tools' evolution gives more clear insights into circumstances of constant development of – by nature more general – concept. The tools' classification resembles phylogenic tree and it is based on the idea of an affinity diagram. To provide the proof for such reasoning the TQM concept was chosen. This proposition can be useful for better understanding origins and development of management thought. It clarifies relations between methods constituting frameworks of quality management.

*Keywords: management concept, evolution, tools, Total Quality Management*

## INTRODUCTION

In order to define a concept general terms are used. It is especially not easy in case of philosophies which evolved through a long period. Their nature was changing, developed in different surroundings. Therefore another approach can be useful which is based on the details of the concept usually expressed by accompanying methods (tools). They are easy to describe, but it does not mean that they are easy to grasp in a manner that allows for better understanding of the concept. The research objective of the paper is to describe the idea of management concept by identifying its tools. The secondary goal is to test whether classification based on phylogeny is suitable for the main purpose.

The proposed methodology refers to evolutionism. It is understood as a concept which assumes constant and continuous development of theory (idea, concept) rooted in the past and adapting to present conditions of its application. Evolutionism is based on the Darwinian theory of biological evolution. Such approach offers a different point of view and permits to identify main characteristics of the concept through reconstruction of its tools' evolution. The author undertook such attempt using the case of Total Quality Management which is defined as "management approach to long-term success through customer satisfaction. TQM is based on all members of an organization participating in improving processes, products, services and the culture in which they work" (Total Quality..., 2015). In the next paragraphs the development of the TQM concept is described. Next the contemporary sets of TQM tools is presented based on the literature review. Applying evolutionary point of view S. Shiba's point of view on the TQM development is given. After this the author presents own classification of TQM tools from evolutionary perspective. The paper finishes conclusions from the presented analysis.

## THE DEVELOPMENT OF THE TQM CONCEPT

One must bear in mind that there is no single or commonly accepted definition of the concept Total Quality Management (TQM). In consequence, TQM has become a fashionable expression associated with multiple meanings (Dahlgaard 1999). Interestingly, neither P. Crosby, W.E. Deming nor J.M. Juran, considered to be the contemporary TQM gurus, actually used the term (Martínez-Lorente, Dewhurst & Dale 1998).

The search for the roots of TQM as a term and its changing interpretations was undertaken by A.R. Martínez-Lorente, F. Dewhurst and B.G. Dale (1998). Based on their analysis of publications from 1986–1997 registered in the ABI-INFORM database, they found that the TQM concept did not appear until the second half of the 1980s, where it replaced *Total Quality* (TQ) and *Quality Management* (QM). S.M.P. Dahlgaard (1999) reached a similar conclusion.

An analysis of the historical development of the TQM concept sheds some light on the differences in nomenclature, and, at the same time, helps to determine which was the first management system that possessed the features with which it is being currently endowed.

Initially, a statistical approach to quality control was used, called *Statistical Quality Control* (SQC). Its characteristic features became the focus of training courses in Japan, where the transformation of a narrowly conceived control tool into a broader concept occurred. The English phrase *quality control* was translated into Japanese as *hinshitsu kanri*. However, the word *kanri* has a different meaning in Japan than in the West. Q. Xu explains that in Japan there is no separation of control and management



(Xu, 1994: 19–20; Witcher 1995). In fact, *kanri* means both control, administration and management. It was the first harbinger of a change of terms from *control* to *management*.

Another premise was the observation that also non-production workers have an impact on the creation of quality. In order to give it its proper expression and distinguish from the meaning of quality control as used to date, the word *total* was added in order to underline a global approach to quality within an organisation. In this way, *Total Quality Control* (TQC) was born. A.V. Feigenbaum was the first author to have used and disseminated the term<sup>1</sup> (Witcher, 1995). According to his definition, TQC is an effective system for integrating the development of quality among various parts of a company, quality retention and quality improvement for economical production, and service that considers its goal to be complete satisfaction of customers (Akao, 1991: 3).

TQC was officially introduced in Japan in 1960 during a series of seminars conducted by A.V. Feigenbaum. But Japanese managers perceived TQM differently. Apart from the companywide approach to quality control, of equal importance is the commitment<sup>2</sup> to quality as an organizational strategy (Akao, 1991: xiv). In response to the erroneous identification of the TQC concept with its Japanese version, the term *Company-Wide Quality Control* (CWQC) was used as an alternative (Akao, 1991: 3). In this way, the importance of the word *total* as an approach to management that involved the entire organisation was underscored, at the same time emphasizing its difference from Feigenbaum's approach. Therefore interpreting TQC at the time as synonymous with CWQC is misguided. However, these concepts are considered alike for example by T. Jordan (2002: 5), or the contents of the PN-ISO 8402:1996 industrial standard<sup>3</sup> (item 3.7, comment 5).

The transition from statistical quality control to company-wide or total quality control occurred in Japan in 1961–1965 in companies whose achievements in the area of quality earned them the Deming Prize in the first half of the 1960s, which contributed to the dissemination of best practices, including those regarding planning. These companies were Nissan Automotive (1960), Teijin and Nippon Denso (1961), Sumitomo-Denko (1962), Nippon-Kayaku (1963), Komatsu (1964), Toyota Jiko (1965) (Akao, 1991: 3).

The greatest propagator of CWQC is considered to be K. Ishikawa, who presented it in his book *What is Total Quality Control? The Japanese Way*, showing the differences between Feigenbaum's TQC and Japanese TQC (Ishikawa, 1986: 2). K. Ishikawa (1986: 4) defined quality control (quality management) as the development, design, production and provision of a product and service qualities that are the most economical, useful and always satisfy the customer. It should be remembered that when describing the PDCA cycle Ishikawa uses the term *control*, not *management*.

As a result, this very popular name conceals a number of interpretations and also different perceptions of the scope of the term. This stems from the fact that TQM combines three distinct strands: productivity (process analysis, operational management, statistical process control), the human factor (trained human resources) and strategic management (Costin, 1994: 4; Dahlgaard, 1999: 473). Depending on the approach of researchers, one of them tends to predominate, which, results in different interpretations of the term.

Thus, taking into account the historical development of the concept, it may be assumed that the name TQM was applied to the first completely formed management system that came into existence in the late 1970s in Japan, in which the relevant methods were used. Such an approach partly converges with D. Garvin's model proposed in 1988, which, according to S.M.P. Dahlgaard (1999: 474) is commonly accepted among theoreticians in the field. D. Garvin isolated four stages of evolution in the history of quality: inspection, statistical quality control, ensuring quality and strategic quality management (Garvin, 1988; Dahlgaard, 1999:

1 The first edition of his book was titled *Quality Control* (1951), and the second one *Total Quality Control* (1961). B. Witcher (1995) believes that the change in the perception of quality control as management was presented by A.V. Feigenbaum in his article titled "Total Quality Control" published in *Harvard Business Review* in 1956.

2 Hence TQM is also synonymous with *Total Quality Commitment*.

3 Additionally, *Total Quality* is mentioned in it as well.

474). S.M.P. Dahlgaard (1999: 474) believes that currently this perception of TQM is too narrow, because it does not include such issues as organizational learning, the sociological approach or interpersonal relationships. Indeed, given the present standard of knowledge, the scope of TQM has significantly expanded, which is evident, for example, in the works of S.M.P. Dahlgaard, with the beginning of the initial TQM concept dating back to the late 1980s, mainly in the USA.

## CONTEMPORARY SETS OF TQM TOOLS

The list of methods to support the implementation of quality management principles is currently expanding. An example of such a trend is the compendium of management methods and techniques compiled by G. Kanji and M. Asher titled *100 Methods for Total Quality Management* (1996). Also Z. Zhang (2000: 127), based on literature studies, identified 83 methods, although, as he himself admits, both theoreticians and practitioners in the field cannot agree either on the number of existing TQM methods or their actual impact on performance. A number of these, owing to their characteristics, belong to the group of TQM methods, although they were originally developed for the implementation of other objectives.

Their sheer number requires at least an attempt at classification. The proposed families of methods usually correspond to the basic activities undertaken as part of TQM. In literature, there is no agreement on the nomenclature; however, three types of such methods can be indicated. For example, J.M. Juran (1986: 20) proposes the following „trilogy” that comprises: quality planning, quality control and quality improvement. A similar division was proposed by M. Duffin (1995: 40), who also came up with three main groups: control, continuous improvement and prevention. In his view, the latter comprises QFD and policies, which may be interpreted as a reference to planning.

In consequence, those wishing to find out about the inventory of quality management tools are faced with a variety of classification proposals, which are, at times, different from one another.

## EVOLUTION OF APPROACHES AND MANAGEMENT METHODS ACCORDING TO SHOJI SHIBA

Shoji Shiba (Shiba, 1995; Shiba & Walden, 2001) presented the application of management methods in response to social and economic changes that have occurred in the business environment in the recent decades.

Fitness to standard<sup>4</sup> (specification) constituted the first phase of management evolution, which came in response to increased demand for mass-produced goods and contributed to the development of statistical quality control methods developed in the 1930s. The inspection function of management and standardization of tasks were accorded paramount importance since it was

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<sup>4</sup> In the French edition of Shiba's book, the word *adéquation* was used.



thought that only in this way a product's conformance with the designer's criteria can be ensured. This tendency, indicated by Shiba, represents the development or improvement of methods for measuring and standardization of work (*Time and Motion Study*) in industrially developed countries, such as the United States and the United Kingdom. This is further supported by the method of sample observations proposed by L.H.C. Tippett and explained in *Random Sampling Numbers* in 1927 and the MTM method (*Methods-Time Measurement*) developed in the 1940s by H.B. Maynard, J.L. Schwab and G.J. Stegemerten.

However, the separation of control from production did not solve the issue of defective products. Additionally, in mass production customer needs were not fully addressed. In consequence, in the 1960s Japan saw the development of methods that would ensure fitness to use and fitness to market requirements (i.e. customer needs). Ways of analyzing them were developed (*market research*), and within organizations, underlined was the need to cooperate of various types of staff who fulfill different functions in the generally conceived production process. This was accompanied by the drive to eliminate the variable quality of products.

The next phase reflected the focus on cost adjustment, which Shiba described as the retention of high quality and low costs. This was influenced by the perception that product price is determined by the market, not by costs and profits. Consequently, in the 1970s methods were developed to reduce production costs while maintaining or improving the quality of products. Methods such as quality circles or the 7 classic QC methods were intended to improve the operation of the organisation. Methods mentioned by Shiba may be supplemented by Toyota's development of one of the most important complete production management systems called Lean Management in 1973–1975. However, such solutions were copied by countries with smaller production costs. As a result, it was necessary to seek further sources of competitive advantage.

A search for new markets led to the emergence of a new approach called by Shiba fitness to latent requirement. In the mid-1980s, methods were developed to enable the identification of these needs as well as the adjustment of organizational activity to develop new products. According to Shiba, they comprise the QFD method and the 7 new TQM methods. The Japanese author does not mention that fact that at that time approaches were identified that integrate company operation with a view to addressing customer needs. H. Takeuchi and I. Nonaka (1986) called these ways *rugby*, which became the basis for the development in Japan of *concurrent engineering*<sup>5</sup>.

Shiba applies the stages listed above to two dimensions: production focus (organisation) and market focus (customer). The transitions among them demonstrate a logical consequence of an evolution in the approach to quality or, in other words, to customer satisfaction (Shiba & Walden, 2001: 11). The diagram proposed by Shiba may be supplemented with a timeline, as shown in Fig. 1.

<sup>5</sup> The emergence of the concept of *concurrent engineering* in the West is related to the activities of the Concurrent Engineering Research Centre, West Virginia, since 1990.



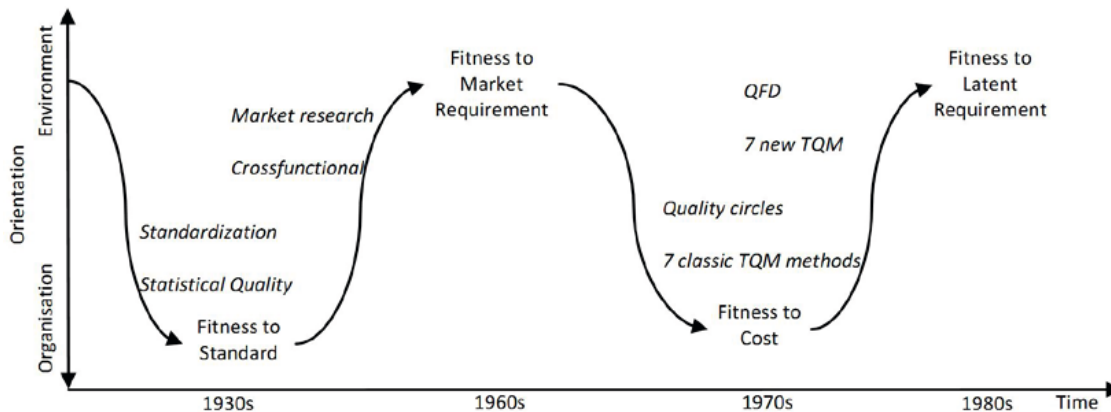


Fig. 1: Evolution of management methods according to Shiba

Source: Author's own idea based on (Shiba, 1995; Shiba & Walden, 2001).

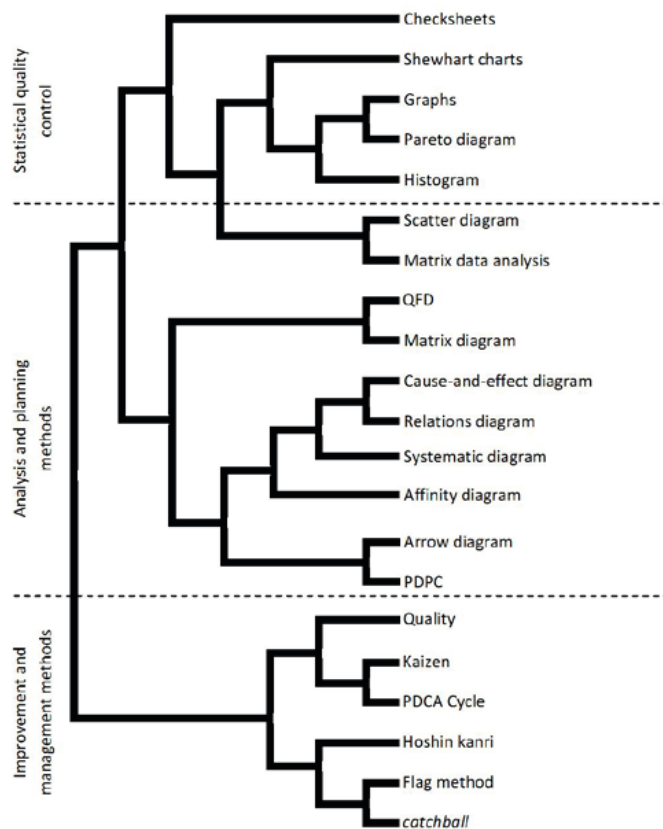
## CLASSIFICATION OF TQM METHODS – AN EVOLUTIONARY PERSPECTIVE

The above-mentioned classifications of TQM have been made from the contemporary perspective and are the result of the deductive process. In this part, the proposed division of TQM methods is developed along inductive lines. The number of methods considered is limited to those that were used as part of TQM in 1931–1978. They constitute the primary set of TQM methods.

The classification is based on the idea of an affinity diagram. Similarities were detected along such parameters as structure, target use, profile etc. at the level of individual methods. Whenever it was impossible to find a correspondence between a given method and any other at a given level, similarities were sought at the level of previously combined methods. The results are presented in Fig. 2.

The tree consists of three main families of methods. The first one comprises methods termed statistical quality control and approximately corresponds to the division into 7 classic QC methods which make use of numerical data. The second family involves methods whose main focus is to analyze the reasons for the occurrence of problems and planning, and includes several of the 7 new QC methods. The third family consists of methods whose main focus is to improve, and more broadly, to implement total, comprehensive management involving the entire organisation, with its best example being the *hoshin kanri* method.





*Fig. 2:* Families of TQM methods

Source: Author's own analysis.

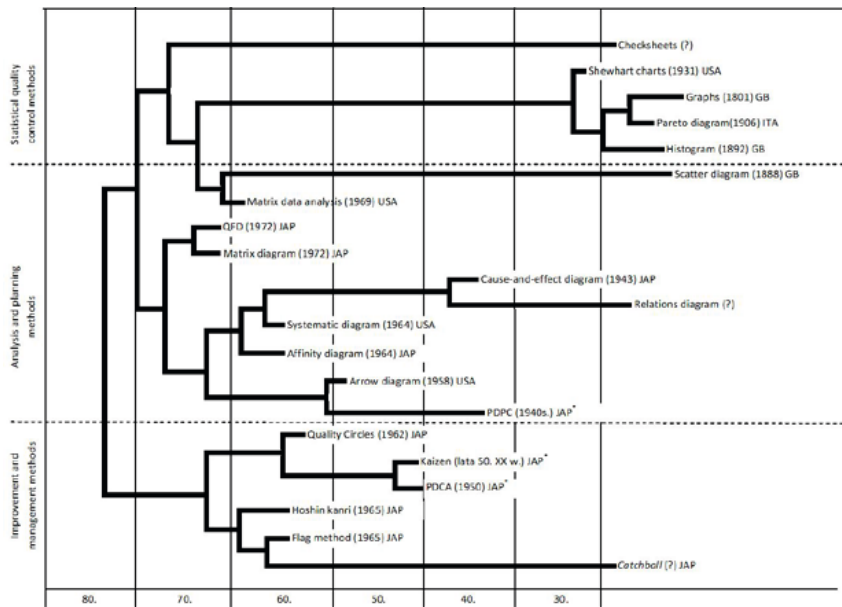
The families of methods described above can be called:

1. Statistical control methods.
2. Analysis and planning methods.
3. Improvement and management methods.

These three families of methods correspond with the evolution of the TQM concept. First of all, they applied to aspects of quality control supported by statistical methods. Next, the reasons for low quality were sought using analytical methods such as the cause-and-effect chart or the matrix chart. The need to manage quality across the entire organisation led to the development of appropriate methods, the key one being *hoshin kanri*. From the perspective of the latter phase of the formulation of TQM, this family can be termed TQM methods proper.

The classification presented above offers just another attempt to precisely match methods to categories. A much clearer and more comprehensible division that illustrates the process of emergence of TQM is the division that takes into account the passage of time. Additional information on the place of origin or a significant modification of the method (marked with '\*' in Fig. 3) indicates original influences within the three categories mentioned above. A modified version of Fig. 2 is shown in Fig. 3. Wherever possible, the first application of a given method is given in brackets.

For the most part, control methods originated in the West. Improvement methods, specifically, analysis methods, can be found both in the West and in Japan. However, planning methods, or more broadly, management methods implemented or applied to quality management have been developed by Japanese practitioners and researchers, who frequently drew their inspiration from Western management concepts.



*Fig. 3:* Families of TQM methods viewed from the perspective of time and place of origin

Source: Author's own analysis.

## CONCLUSIONS

Presented analysis gives a solid base for identification the main changes within the TQM concept. The tools clearly indicate parts of the concept which could be separately studied. All of them creates a unified view and allows to understand how the given concept evolved. Thanks to identification of its small pieces – tools – it is possible to present the major aspects which shaped and created a contemporary face of the management concept.

At the end of the paper some limitations should be mentioned. The first one is the fact of well preserved (in a form of description in the literature) tool. Without it tracing its roots is difficult and as the case of TQM had proved sometimes not possible. The second one is a subjective nature of conducting a phylogenetic study. A researcher is guided by general rules and a final result of the analysis depends of one's knowledge and experience. Some relationships seems to be obvious while others not. Deepening the knowledge of the management history (business history) eases a perception of such relations. It is especially important where the concept crosses the international borders and is developed in different part of the world.





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# Dissemination of Ecodesign Concept in SMEs: Experiences in Construction and Related Enterprises

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## *ABSTRACT*

Environmental protection has become an unavoidable trend in many sectors including construction and related industries. These sectors use great quantities of raw materials and chemicals, produce a lot of wastes and are connected with high energy consumption. Different tools were developed for more efficient integration of environmental aspects into decision processes. Ecodesign means the integration of environmental aspects into product design and development, with the aim of reducing adverse environmental impacts throughout a product's life-cycle. The life cycle perspective is important because decisions made already in the design stage in the companies have environmental effects in the use and disposal of products.

In the paper some results and experiences of ecodesign concept dissemination in SMEs are presented. Several types of ecodesign tools were used and presented during consultations in enterprises with the aim easier define and prioritize main actions for environmental improvements. Most Slovenian enterprises from construction and related sectors without previous experiences in ecodesign practices showed relatively high interest for implementing ecodesign concept. Although such interest as expressed, obvious obstacles for starting and integrating life cycle thinking exist.

*Keywords: ecodesign, construction sector, life-cycle analysis, environmental impacts*

## INTRODUCTION

Manufacturing companies are faced with more and more requirements in terms of environmental criteria which have to be taken into consideration before and during product development process and other decision-making processes. Namely, all products and services have some impact on the environment, which may occur at any or all stages of the product's life cycle including raw materials extraction, manufacture, distribution, use and waste disposal. These impacts may be of short-term or long-term and they may occur at the local, regional or global level.

Furthermore, more organizations are coming to realize that there are substantial benefits in integrating environmental aspects into products design and development (Fiksel 1996; Tischner and Charter 2001; Zbicinski et al. 2006). Some of these benefits may include: lower costs, stimulation of innovation, new business opportunities, improved product quality and better image in public. However, a product's environmental aspects must also be balanced against other factors, such as the product's intended function, performance, safety and health, costs, marketability, quality and legal and regulatory requirements (ISO 2002).

The ecodesign of products has become part of the business decisions and innovation processes in many different sectors and countries. It is defined as "the integration of environmental aspects into product design and development, with the aim of reducing adverse environmental impacts throughout a product's life cycle" (ISO 2002). Therefore, the central aims of ecodesign are to reduce the consumption of primary resources, optimize production and distribution, prolong the lifespan of the product, use fewer hazardous materials, increase the use of recycled materials, and/or make waste treatment easier and more efficient both environmentally and economically. That means, potential of ecodesign environmental and economic advantages go beyond the reach of manufacturer connecting the design of a product to a wider situation including raw materials extraction, production, transportation, use and disposal with the attempts to minimize impacts in all these stages.

Since most of the environmental burdens of a product are determined at the design stage, this stage is the crucial step when improving a product's environmental performance. Therefore, the principle of ecodesign is based on a preventive approach: if environmental considerations are taken into account during the earliest phases of product development, then it is more likely that the product's overall environmental impact can be significantly lowered. Early identification and planning enables organizations to make effective decisions about environmental aspects that they control and to better understand how their decisions may affect environmental aspects controlled by others (at the raw material extraction or waste treatment) (ISO, 2002).

Ecodesign concept can also be useful to the companies in construction and related enterprises to build up more efficient environmental policies. Namely, construction sector with related industries represents one of the significant actors regarding environmental impacts. Not only construction of buildings and infrastructure but also huge quantities of chemicals used as well as enormous amounts of energy and water during the use phase of the buildings together with wastes after the demolition process mean that environmental aspects must become an important part of decision making. In case of building product, general activities within life-cycle phases of building product include following phases (Bayer et al. 2006):

- **Materials manufacturing:** removal of raw materials from earth, transportation of materials to the manufacturing locations, manufacture of intermediate and finished materials, building product fabrication, packaging and distribution of building products;
- **Construction:** all activities to the building project construction;
- **Use and maintenance:** building operation including energy consumption, water usage, environmental waste generation, repair and replacement of building assemblies and systems;



- **End of life:** includes energy consumed and waste produced due to building demolition and disposal of materials to landfills, and transport of wastes; recycling and reuse activities related to demolition wastes.

Schematic presentation of the main life-cycle stages of building product is shown in Figure 1. Some general ecodesign criteria which can be evaluated within an ecodesign project (and which cover different life cycle phases) are presented in Table 1 (Hübner, 2012).

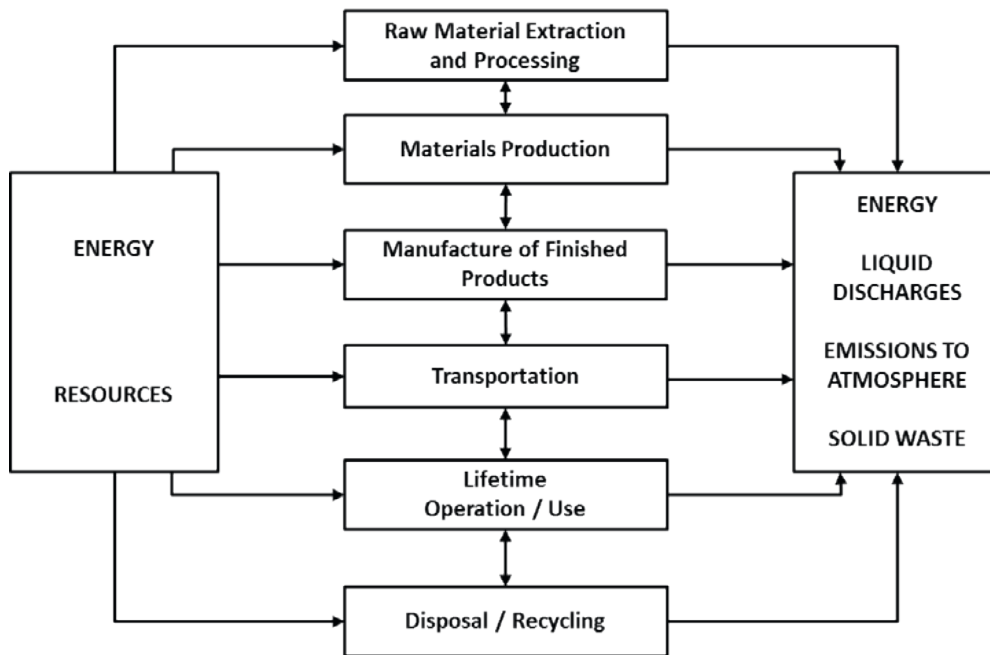


Figure 1: The main life-cycle phases of building product (Bayer et al. 2006)

*Table 1:* General ecodesign criteria according to product-life phases (Hübner, 2012)

PRODUCT LIFE-CYCLE PHASE	ECODESIGN CRITERIA
<b>Before point of sale</b>	
Production phase (including extraction and distribution)	Renewable resources
	Non-toxic resources
	Secondary raw materials
	Cleaner production
	Optimized transport distances
	Compressability
<b>After point of sale</b>	
Use phase	Durability
	Repairability, Upgradeability
	Water and energy efficiency
	Shared use possibility
	Remanufacturability
	Services (guarantee, maintenance)
End of life phase	Recyclability
	Compostability

## CONCEPT OF ECODESIGN IN CONSTRUCTION INDUSTRY

The construction industry arguably has a great impact on our society and quality of life, providing the places we live, work and socialize as well as the transport and infrastructure. It is a resource, energy and waste intensive sector, as confirmed by the following facts (EEN 2013):

- more than half of all materials extracted from the earth (over 3 billion tonnes in the EU) are transformed for use in construction,
- over 450 million tonnes of waste are generated annually in the EU through construction and demolition,
- buildings account for 42 % of the energy consumed and around 35 % of all EU greenhouse gas emissions.

Furthermore, studies from the European Construction Industry Federation shows that 40 – 45 % of Europe's energy consumption stems from buildings with a further 5 – 10 % being used in processing and transport of construction products and components. Onsite construction and manufacturing of construction materials are characterized by the generation of large amounts of non-recyclable wastes (EEN 2013a). In Europe, the mineral extractions per capita intended for building amount to 4.8 tonnes per



inhabitant per year, which is 64-times the average weight of person (Zabalza Bribiàn et al. 2011). About 20,000 various materials and products are on the market to be used in buildings in Europe (Dürkop 2007).

On the other side, construction sector in EU has a huge eco-efficiency potential as reported by Danish Technological Institute (2010). That means, a lot of opportunities to improve environmental performance within life cycles of construction and related industries are present and the most effective way of reducing the environmental impacts of construction products is to address these issues at the design stage. Here, the “product” in construction sector is a building or infrastructure object. However, many other sectors are involved in construction process, including chemical industry, wood industry, metallurgy, furniture production, energy production, water supply, production of electrical and electronic devices, waste treatment etc.

Therefore, it is even more important to take life-cycle approach into consideration when thinking about minimizing environmental impacts.

Due to these facts, EU started to implement life-cycle concepts into EU regulations. For example, Regulation on harmonized conditions for the marketing of construction products (Official journal of the European Union, 2011) clearly states that when assessing the performance of a construction product, account should also be taken of the health and safety aspects related to its use during its entire life-cycle. Moreover, the same regulation states that the construction works must be designed and built in such a way that they will, throughout their life-cycle, not be a threat to the hygiene or health and safety of workers, occupants or neighbors, nor have an exceedingly high impact, over their entire life-cycle, on the environmental quality or on the climate during their construction, use and demolition. Furthermore, it is required that the construction works must be designed, built and demolished in such a way that the use of natural resources is sustainable and in particular ensure the reuse or recyclability of the construction works, their materials and parts after demolition; durability of the construction works; use of environmentally compatible raw and secondary materials in the construction works. Due to the regulation on one side and clear economic and social benefits, a life-cycle concept is becoming more and more popular in building and construction industries in practice (Lloyd et al. 2005; Joachimiak-Lechman 2014; Arsenault 2013; Oliver-Solà et al. 2009; Zabalza Bribiàn et al. 2011).

The fact is that the materials and products used in buildings make a significant environmental impact long before they are ever installed. These impacts can include intensive amounts of embodied energy used to extract raw materials and then manufacture the product. They can also include the associated fossil fuel depletion and carbon footprints of the processes, which may contribute to smog, ozone destruction and global climate change. The disposal of building wastes also contributes through the use of energy to remove and relocate them plus the impact of disposal in landfills, incineration, or other methods. The finished products move into the construction phase by being transported to the construction site and incorporated to the building (Arsenault 2013). Different products, parts and components used in construction of the buildings are linked to different environmental impacts throughout their life-cycles. Table 2 shows ecodesign criteria (material-related requirements) for different products groups used in construction sector.



*Table 2:* **Ecodesign criteria and requirements for different product groups used in construction sector (Mudgal 2013)**

Product group	Ecodesign criteria
Windows, glazed doors	<ul style="list-style-type: none"> <li>– Effective maintenance of windows to extend useful life</li> <li>– Take back schemes / reuse / recycling</li> <li>– Design for dismantling and recycling</li> <li>– Use of recycled materials</li> </ul>
Thermal insulation	<ul style="list-style-type: none"> <li>– Restricted use of hazardous materials</li> <li>– Effective maintenance to extend its useful life</li> <li>– Take back schemes / reuse / recycling</li> <li>– Design for dismantling and recycling</li> <li>– Use of recycled materials in insulation and packaging</li> </ul>
Hard-floor coverings	<ul style="list-style-type: none"> <li>– Promote efficient extraction of raw materials</li> <li>– Limitation on the use of certain hazardous materials/substances</li> <li>– Requirements of environmental management measures in plants involved in the production</li> <li>– Requirements for the extraction management of natural products: maximum ratio of usable material discarded</li> </ul>
Wall panels	<ul style="list-style-type: none"> <li>– Requirements on the origin of materials (recycling content, legal/sustainable harvesting)</li> </ul>

## DESCRIPTION OF EDECON PROJECT

The project EDECON aimed at improving the integration of ecodesign in the construction and building materials sector from the design and development phase through to the implementation phase. The project targeted SMEs producing and manufacturing components used in construction and building materials as well as in entire building projects. It was a part of the framework of 2012 Work Programme of the Entrepreneurship and Innovation Programme of EU. The project aimed at providing training and ecodesign services such as ecodesign audits and in-house training for over 820 SMEs in 6 EU countries (Denmark, United Kingdom, Germany, Spain, Slovenia and Estonia) with the goal of integrating recommended ecodesign actions either through their daily activities or through product development projects (EEN 2013a).

The focus of the project were SMEs in construction and related industries. SMEs have less financial and human resources to start an ecodesign implementation and project. In addition, the high number of SMEs is responsible for much higher environmental impact as imagined. Study from Danish Technological Institute (2010) suggests that small and medium enterprises (SMEs) contribute approximately 64 % of the industrial pollution in Europe. However, only 24 % of SMEs actively engage in actions reducing their environmental impacts in EU.

## PROJECT'S MAIN OBJECTIVES

The main practical objectives of the EDECON project were:

- to develop a set of tools to promote ecodesign among SME companies within the construction and building materials sector to be used for awareness raising activities;



- to train external environmental experts in carrying out ecodesign company visits and audits.
- to recruit 1000 SME companies with low level of knowledge on ecodesign to promote and disseminate ecodesign concept through workshops conferences and webinars;
- to service more than 820 companies within the sector through an ecodesign company visit and audits.
- to implement ecodesign projects in chosen companies based on the recommendations received through the ecodesign company visit and audit.

The main objectives of the project was to spread the idea of ecodesign to construction and related companies understand the concept of ecodesign based lifecycle approach and widen their understanding of direct and indirect environmental impacts they cause with their activities and decisions. Furthermore, companies get acquainted with several ecodesign tools which enable more efficient optimization of the problem.

Together with the company team our expert team tried to identify where are the most important impacts and how the company is able to control them, directly or indirectly. The first step to do this and to improve consequently the environmental performance of the products, is to gain an understanding of the impacts throughout its life-cycle (EEN 2013).

Environmental performance, environmental impacts and improvement possibilities were characterized with different ecodesign tools, like life-cycle matrix and ecodesign strategy wheel. The use of life-cycle matrix tool allows the companies to link life-cycle stages with several environmental impacts and eliminate less important life-cycle stages but also highlight those areas where the major impacts arise. The so called Ecodesign strategy wheel is a tool for identifying the scope for ecodesign. This tool is a conceptual model, which shows different fields of interest in ecodesign which are pictured on several axis of the wheel. With such a tool it is possible to investigate the opportunity or scope to make design changes (Brezet and van Hemel 1997). This depends on two factors: a) the current state, i.e. how much has already been done by the company, and b) the potential for improvement (the options available to the company to make design changes to address the most significant impacts in the product life-cycle) (EEN 2013). Ecodesign strategy wheel can be used for several purposes as summarized by Zbicinski et al. (2006). First, it is a visual representation of the environmental profile of the existing product. In addition, it can provoke and inspire improvement options and it is helping in comparison and balancing different improvement strategies. Furthermore, it will provide a useful visual comparison between the old and the new product, and for that reason it is a useful means to communicate new ideas to wider community (both within an enterprise and to the business partners).

In addition, together with company's team we considered the design options which provide the greatest opportunities to reduce environmental impacts defined in life-cycle matrix. Some of design focus areas considered together with related aspects are shown in Table 3.



Table 3: Ecodesign focus areas and related benefits (EEN 2013)

Ecodesign focus areas	Key questions	Environmental benefits	Business benefits
Design for material sourcing	When you specify materials and components, do you consider the impact on the environment related to weight, volume, use of recyclates, embedded energy and water on biodiversity?	<ul style="list-style-type: none"> <li>– Reduced resource depletion</li> <li>– Reduced embodied energy/water</li> <li>– Reduced transport burden</li> <li>– Reduced carbon dioxide emissions</li> <li>– Reduced impact on biodiversity</li> </ul>	<ul style="list-style-type: none"> <li>– Reduced transport costs</li> <li>– Improved image/access to markets</li> </ul>
Design for manufacturing	Have you considered changing manufacturing processes to reduce energy and water use, waste and recycling of waste?	<ul style="list-style-type: none"> <li>– Reduced CO<sub>2</sub> emissions and depletion of water resources</li> <li>– Reduced resource depletion</li> </ul>	<ul style="list-style-type: none"> <li>– Reduced energy costs</li> <li>– Less wastes – Reduced material costs</li> </ul>
Design for transport and distribution	Have you considered size, shape and volume of your products from a packaging and transport viewpoint? When specifying packaging do you consider embodied energy and water, production of VOCs or hazardous substances?	<ul style="list-style-type: none"> <li>– Reduced CO<sub>2</sub> emissions and depletion of water resources</li> <li>– Reduced air pollution</li> <li>– Reduced transport use – less emissions and wear and tear on infrastructure</li> <li>– Reduced quantities of hazardous substances in the environment</li> </ul>	<ul style="list-style-type: none"> <li>– Reduced transport costs</li> <li>– Reduced packaging costs</li> </ul>
Design for use (including installation and maintenance)	When you design your products, do you think about their energy/or water consumption when they are used? Do you consider the amount of consumables and any hazardous materials that may be released during use? Do you consider their longevity and ease of maintenance?	<ul style="list-style-type: none"> <li>– Reduced demand on new material resources</li> <li>– Reduced CO<sub>2</sub> emissions</li> <li>– Reduced potential for proliferation of hazardous substances in the environment</li> <li>– Reduced depletion of water resources</li> </ul>	<ul style="list-style-type: none"> <li>– Lower life cycle costs for consumer</li> <li>– Reduced maintenance costs</li> <li>– Good product image</li> </ul>
Design for end of life	When you design your products, do you think about how easily they could be reused or dismantled and recycled? Do you consider any hazardous substances in the product that might be released during dismantling or recycling?	<ul style="list-style-type: none"> <li>– Reduced use of land or landfill</li> <li>– Reduced demand on new material resources</li> <li>– Reduced CO<sub>2</sub> emissions</li> <li>– Reduced depletion of water resources</li> </ul>	<ul style="list-style-type: none"> <li>– Compliance with regulation</li> <li>– Reduced waste disposal costs</li> </ul>

## PRACTICAL EXPERIENCES AND PERCEPTIONS FROM CONSULTATION AND TRAINING

The EDECON project started in April 2013 and finished in December 2014. Target group were SMEs in construction and related industry from Podravje region, while other enterprises were also included exceptionally if the interest was expressed. During the project 73 basic and 25 advanced advising services were given to 73 enterprises. In realization of Slovenian part of the project a group of six experts participated. Enterprises were recruited via phone calls, e-mails, personal contacts, fair-trades, workshops and conferences, e-European Entrepreneurial Network (EEN) news, and with help of Regional Chamber of Crafts and Entrepreneurship Maribor.



In general, we can divide the reactions from SMEs into two groups based on expressed interest and practical experiences. The first group consists of SMEs that took this project very seriously and have organized the meeting with 5-7 employees from different company section (e.g. technical director, general director, R&D staff, marketing staff, and environmental section). The SMEs from the first group have been aware of general ecodesign concept. In general, they were very satisfied with ecodesign advisory services and think further to realize the proposed eco-design plan in the future. In a second group were SMEs which need additional convincement why ecodesign knowledge was useful at all. They have never heard of ecodesign before the consultations within EDECON project. These enterprises consequently showed less interest to implement presented ecodesign concept.

In general, a certain percent of SMEs were not aware that some aspects that are actually a part of ecodesign concept have already been carried out as a part of their previous activities. However, all SMEs agree that eco-design enable them some new business opportunities, while at the same time they expect that the image of the company will not be significantly better due to introduction of ecodesign.

Most SMEs see their opportunity for improvement in connection with better knowledge of materials for production, which means they should obtain more information from their suppliers. Audit reports have been very well received and SMEs asked for advanced advisory services in greater extent that it has been expected. However, most of SMEs are not ready to provide additional financial sources for eco-design introduction, but are ready to do this in regular working activities. The SMEs are aware that for the environmental evaluation of alternatives in the frame of eco-design do not have enough knowledge, equipment and data. Therefore, the SMEs expect some help from external experts.

Environmental awareness of enterprises was evaluated via experts' interviews of respondents, mainly managers and R&D leaders. For specific product the level of awareness on the scale from 0 to 100 was marked. Within awareness evaluation, different aspects were discussed i.e. materials, energy, water, waste, pollution and social aspects. The results of enterprises awareness level about environmental impacts related to their products or services are presented on Figure 2. Respondents evaluated their environmental awareness relatively high, only awareness regarding water was evaluated as intermediate.



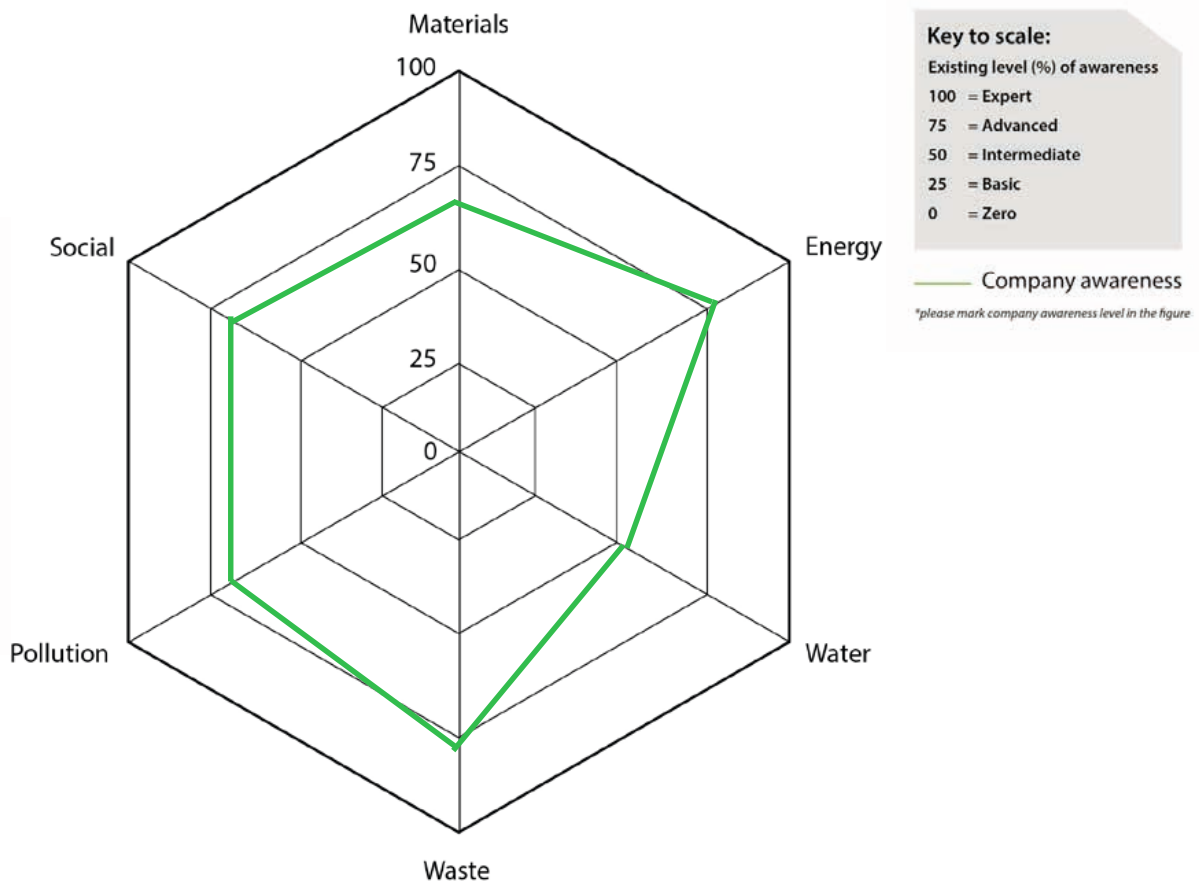


Figure 2: The enterprises awareness level about environmental impacts related to their products or services.

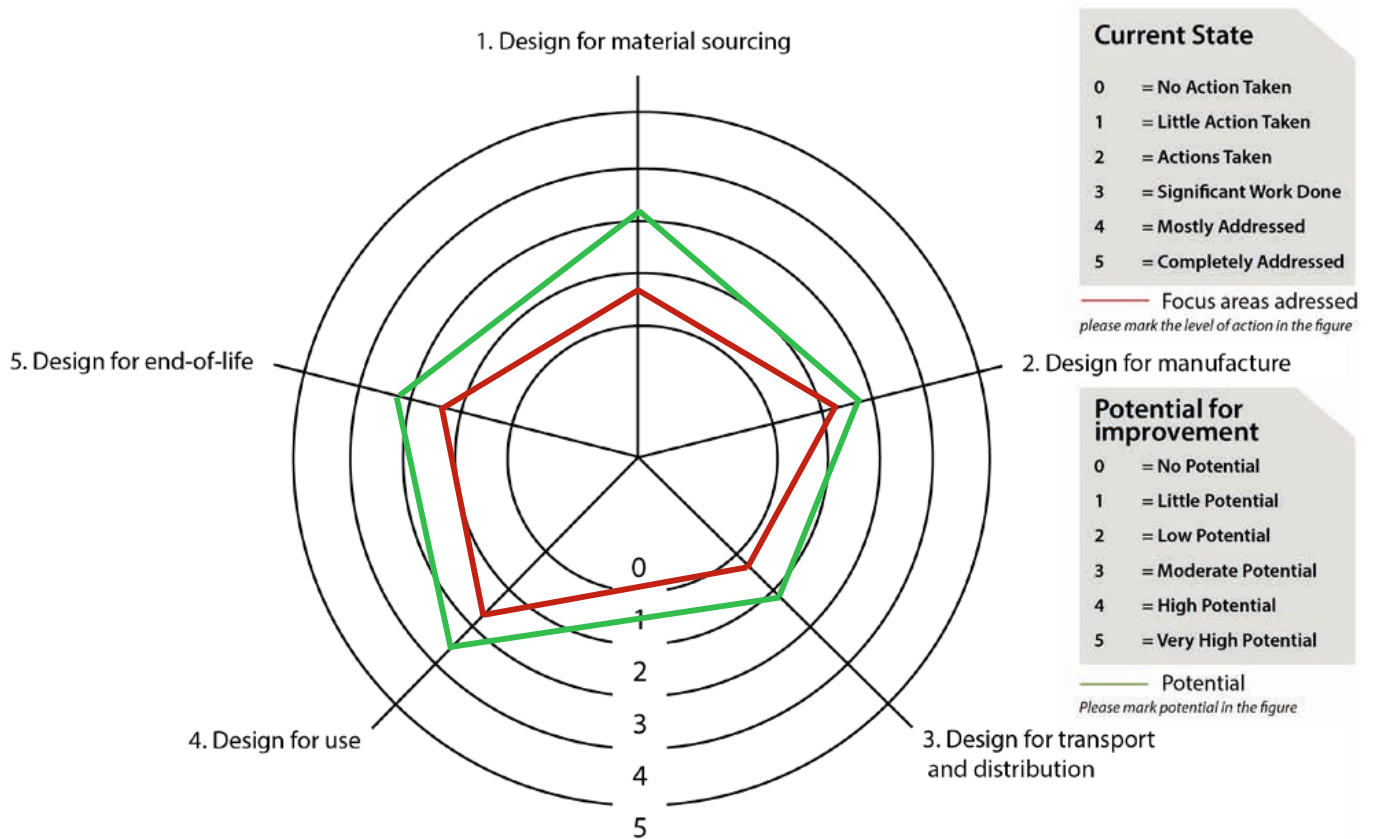
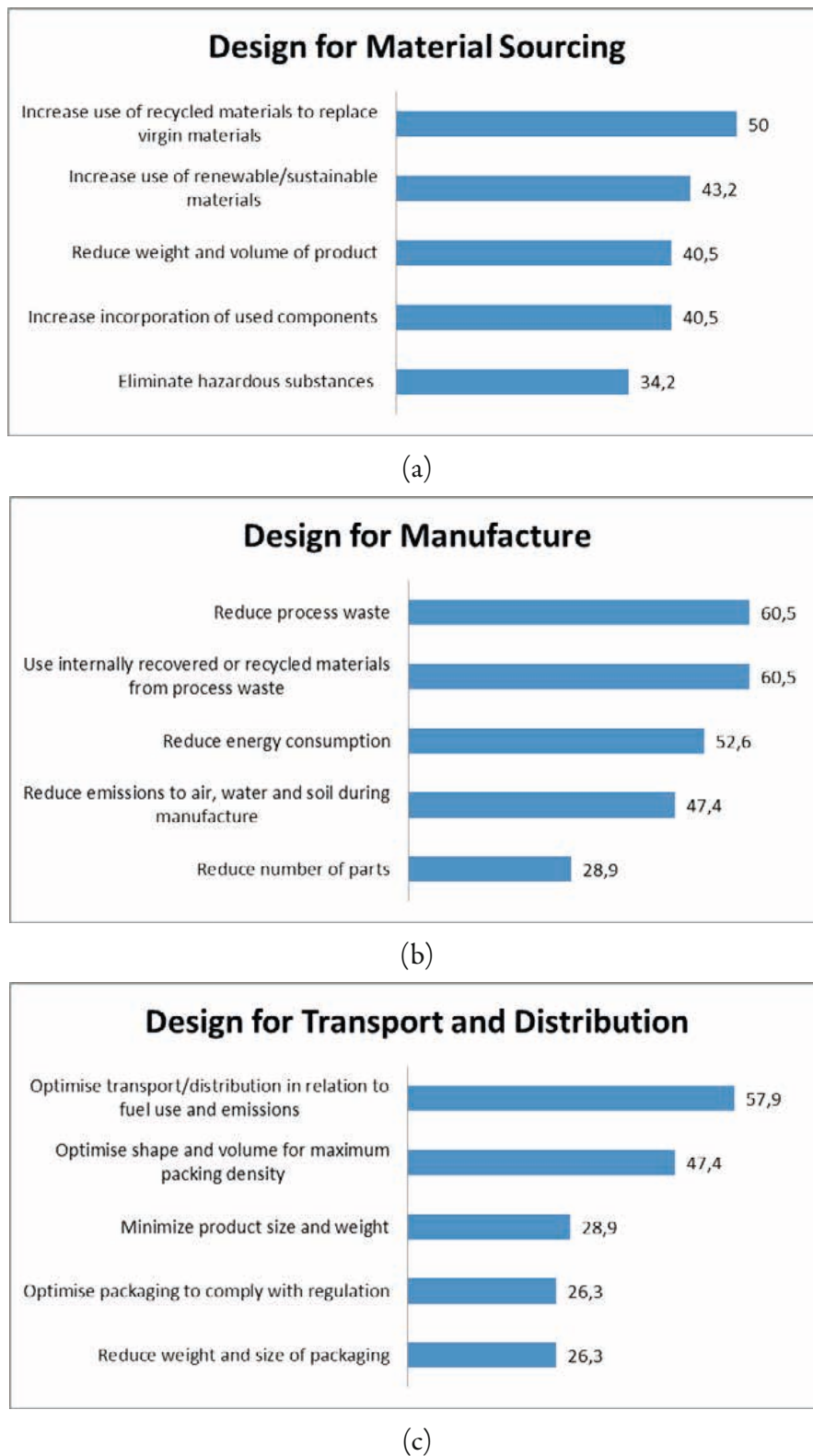


Figure 3: Current state of ecodesign in Slovenian enterprises and potential for its improvement (LiDS wheel based on average results).

Current state of ecodesign in Slovenian enterprises and potential for its improvement are presented as a LiDS strategy wheel (Figure 3). They were analyzed in particular stages of environmental life cycle, that's are: design for material sourcing, design for manufacture, design for transport and distribution, design for use, and design for end-of-life. Presented results are based on average data obtained by questionnaires during advisory sessions. Current state in ecodesign was evaluated the best in design for use phase, where it was rated as significant work done. Actions were taken also in the design for manufacture and design for end-of-life, while in design for material sourcing and design for transport and distribution only little actions were taken.

Potentials for improvement were found in each environmental life cycle phases. High potentials for improvement were recognized in design for use phase, while moderate potential were detected in almost all other phases. Low potential for improvement was found only at design for transport and distribution. Comparison of improvements potential to current state revealed that the highest opportunities potential is connected with design for material sourcing phase and the less promising option was found to be design for manufacture.

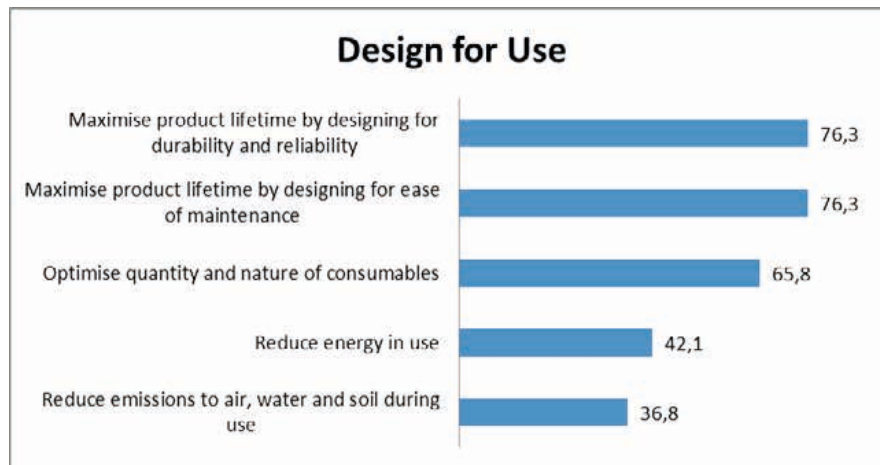
In Figure 4, results from questionnaires (ecodesign checklists) are presented for five life-cycle phases. Only five most important aspects are shown here although more ecodesign criteria were offered for consideration.



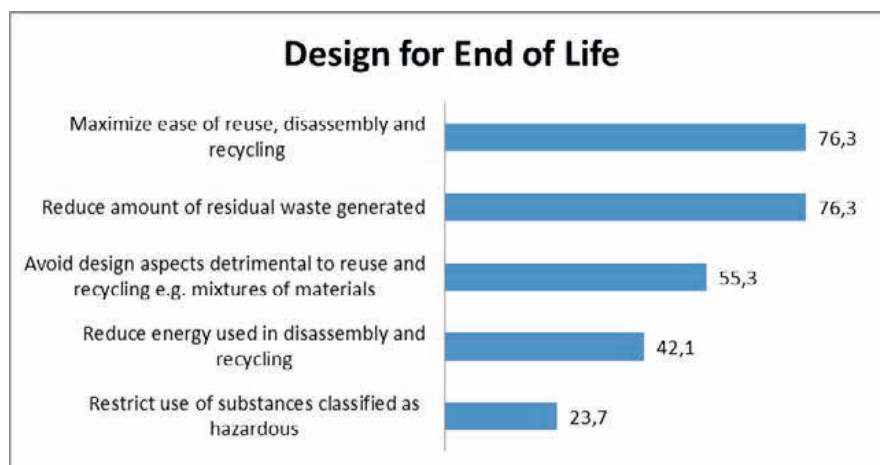
*Figure 4:* Ecodesign checklist top five rated and already implemented options for design improvement regarding to design focus area: (a) Design for material sourcing, (b) Design



for manufacture, (c) Design for transport and distribution, (d) Design for use, and (e) Design for end-of-life.



(d)



(e)

*Figure 4 (continued): Ecodesign checklist top five rated and already implemented options for design improvement regarding to design focus area: (a) Design for material sourcing, (b) Design for manufacture, (c) Design for transport and distribution, (d) Design for use, and (e) Design for end-of-life.*

From the expert advisory sessions in the SMEs, the ecodesign project findings could be summarized as follows:

- Poor responsiveness of invited enterprises to participate in the project despite the offer was free of charge;
- Enterprises are not well informed and aware about the environmental impacts they indirectly cause in the early stages of the product life cycle;
- Enterprises often expressed their interest in ecodesign only by implement partial and not comprehensive measures;

- Relatively lot of enterprises did not recognize improvement opportunities. They believe that they already have implemented all possible aspects (what was actually not the truth as discussion revealed);
- Most managers in enterprises believe that the integration of ecodesign guidelines in the development is too expensive;
- Misconceptions concerning what ecodesign really means;
- Loss of interest for further advanced advising services after the managers find that it would be necessary to make changes to the business-as-usual approaches.

## CONCLUSIONS

In this paper practical experiences and perceptions from consultation and training in Slovene construction and related enterprises on ecodesign are presented. Although ecodesign gained a lot of attention and implementation worldwide, its economic and environmental benefits are still relatively unknown in Slovene companies. In general, it was difficult to get the attention of SMEs on this subject. The SMEs, especially the smallest one, are fully busy with their own daily business activities and they are addressed daily from different business institutions on different subjects.

Ecodesign criteria create potential environmental advantages for each phase of product's life, thus allowing a product's environmental impact to be reduced along its entire life-cycle. Implementation of ecodesign enables companies in construction and related industries to start to think wider and to realize that their decisions have not only direct but also many indirect consequences on the environment. Namely, life-cycle concept is completely different way of thinking than concentrating on direct impacts limited to company's location.

Average environmental awareness of enterprises was evaluated according to the number of environmental aspects enterprises were taking into consideration. It was recognized that the highest level of ecodesign in Slovene construction and related enterprises was reached in design-for-use phase. Actions were taken also in other phases of the life cycle. Only little actions were taken in design for material sourcing and design for transport and distribution. Potentials for improvement were found in each environmental life cycle phases. High potentials for improvements were mainly detected in the phases of design for material sourcing and design for use, including installation and maintenance.

Project findings could be summarized as misconceptions concerning what ecodesign really means. Most managers in enterprises believe that the integration of ecodesign guidelines in the development used to be very expensive, what is not necessarily true. The majority of enterprises are still not aware of improvements opportunities. Some of them believed they were forced to change their well-established everyday practices. Such companies expressed the limited interest to implement ecodesign life-cycle approach, i.e. they were prepared to integrate partial ecodesign measures and not systematic comprehensive ones. Other obstacles to ecodesign implementation are poor responsiveness of invited enterprises and awareness about the environmental impacts in the early stages of the life cycle.

It is worth to point out that ecodesign is an approach, and not a strategy. It is a special methodological instrument for achieving goals which concern environmental improvements and goals defined by management in a wider environmental policy. The selection/application of ecodesign criteria is therefore highly dependent on company's strategy (Hübner 2012). The importance



of life-cycle approach that is in the core of ecodesign is it can be extended to so called life-cycle management (thinking) in enterprises. This approach goes beyond enhancing environmental improvements only inside individual company. It links different actors in supply chain.



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# Possibilities for Using Public Procurement for Innovation in Small Transition Countries

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## *ABSTRACT*

This paper reviews the state of the art in the field of using of public procurement as an innovation policy instrument which is in the literature known as the Public procurement for innovation (PPI). The modern state has the task to enable the favourable conditions for achieving of satisfactory level of economic growth which reflects in growth of standard of living. Innovation is extremely important in achieving of higher international competitiveness and many states use public funds to support creation of innovation. But recent financial and economic crises have induced austerity measures in public budgets, which forces the state to use public money more wisely and in more efficient ways.

Developed countries have been directing public procurement into purchasing of innovative products, services and works for a long time. This has been the subject of growing research in last 15 years, whereas it has not been the case in less developed countries. Our analysis of the recent research shows that the most of the reviewed literature applies case study method for exploring of PPI and this cases come mainly from the most developed countries. Research on the bigger sample are scarce, but they all indicate that PPI could be more effective way of inducing innovation compared to the other more often used instruments (e.g. R&D subsidies). Only the small number of existing studies focuses on the smaller and less developed countries. Therefore, our aim is to draw attention of the researchers, and also of the policy makers, to the possibilities for more efficient financial support for creation and diffusion of innovation, especially in the context of small transition countries.

*Key words:* **public procurement, innovativeness, competitiveness, innovation policy instruments, small transition countries**

## INTRODUCTION

One of the most important tasks of each country today is to create the conditions that support an adequate level of economic growth, which then helps their citizens to achieve a satisfactory standard of living. A lot of available studies deal with the issue of competitiveness, one of the most famous being the survey performed by the World Economic Forum – the Global Competitiveness Report. In the period from 2014 to 2015, it covered 144 countries (WEF, 2014). WEF uses a complex system of assessing competitiveness, based on the twelve pillars of competitiveness. The eleventh pillar stands for business sophistication and the twelfth for technological innovation, and in the long run they are the most important ones of all the twelve pillars for achieving a higher standard of living (WEF, 2014).

The European Commission has a special section which deals with the competitiveness of European enterprises in the world market – Directorate General for Enterprise and Industry (EU E&I, n.d.). This section is responsible for a variety of initiatives and policies, such as the Lisbon Strategy for Growth and Jobs (EC, 2000), which was created as a response to globalization and strong competition of the US, Japan and, in recent years, even the emerging Chinese economy. A new strategy called Europe 2020 (EC, 2010) is now focusing on the following five general objectives: 1) strengthening the industry and the transition to clean technologies, 2) encouraging innovation, 3) supporting small and medium-sized enterprises (SMEs) and promoting an entrepreneurial culture, 4) ensuring an open internal market and 5) supporting breakthroughs in European space research. In order to reach these objectives, the EU devotes a lot of attention, resources and activities to innovation, as an important component of achieving greater competitiveness.

Understanding the role of government in promoting innovation is a very important issue, especially in times of crisis, when countries have limited financial resources at their disposal. In such circumstances, growing deficits impose additional requirements on various bodies that manage public funds. In the process of achieving the objectives of state economic policies, the main emphasis then lies on cost savings and more efficient allocations of the remaining money. That is why a country's public procurement system must achieve value for money. The results of several studies (e.g., Aschhoff & Sofka, 2009; Guerzoni & Raiteri, 2012; Slavtchev & Wiederhold, 2011) suggest that the public procurement of innovative products and services could be an appropriate tool for effectively achieving higher levels of innovativeness (of companies and countries) in comparison with the currently used instruments (R&D subsidies, fiscal stimuli, etc.).

In the next chapter, we review the literature that shows an emergence of the concept of using public procurement as a tool for promoting innovation. After that we present an analysis of PPI case studies based on their focus area (a general PPI program or a focus on particular innovative product or service) and the geographical dispersion of these cases. We then discuss the implications for policy makers and present our conclusions.

## LITERATURE REVIEW

A historical review by Mowery and Rosenberg (1979) presents ten empirical studies on innovation dating from the 1960s through 1970s. Although the authors criticized the conclusions of these studies, they more or less agreed on the importance of understanding user needs and meeting anticipated demands for successful innovation (Mowery & Rosenberg, 1979). However, their conclusions are directed more towards the need for active supply-side government policies. Demand-side policies are mainly seen as the best way of diffusing innovation. For years, this review has been the basis for supply-side innovation policies until Edquist





and Hommen (1999) re-invoked some powerful arguments in favor of demand-oriented interventions. The linear approach sees innovation as a process that has a starting point in science, which then leads to the development of technologies that could potentially satisfy market needs. In contemporary conditions, without a feedback loop, this approach is not satisfactory. This is why the authors recommend a systemic approach that takes into account various interdependencies and the importance of feedback, and uses the method of attempts and failures (Edquist & Hommen, 1999). Therefore, there are lots of arguments in favor of both supply-side and demand-side innovation incentives.

Since public procurement accounts for a large proportion of total demand – around 16% of gross domestic product (GDP) (Rolfstam, 2009), this can also be a strong pull factor for innovations. In the literature, we have found a number of observations regarding the use of public procurement as a tool for promoting innovation. Rothwell and Zegveld (1981) compared the effect of R&D subsidies and public procurement on innovation and concluded that public procurement was a more effective incentive for innovation in the long run. Geroski (1990) adds restrictions to this view by listing the specific conditions under which it holds: when the strict standards are present, when the needs for innovations are clearly expressed, and when there is a guaranteed market for innovative products and services at an early stage of the life cycle. He points out that the public procurement system could be abused if its objectives are not clear and if the policy protects domestic entities or national champions. The role of government is also discussed by Rothwell (1994), who believes that PPI has maximum impact on goods and services, where the state is the largest consumer and a catalyst that promotes the diffusion of innovations.

Edquist and others (2000) focus on the formerly neglected aspect of demand by emphasizing the importance of public procurement as an environmental factor that supports innovation in the field of modern technologies. They state that the “... public technology procurement occurs when a public agency places an order for a product or system which does not exist at the time, but which could (probably) be developed within a reasonable period” (Edquist et al., 2000, p. 5). Recently, this concept has become widely recognized in the literature as the “public procurement for innovation” (PPI). In 2005, the European Commission working group created a report on PPI policies in response to the growing interest at the EU level. It was aimed at establishing an environment conducive to innovation by using public procurement, at all government levels and in all member states (Edler et al., 2005). The empirical part of this report provides practical case studies from different EU countries. Additional case studies can be found in the later Aho Group report (Aho et al., 2006).

Edler and Georghiou (2007) provide an overview of innovation policies applied at the EU level and conclude with an observation that all of them are still supply-side oriented. The EU innovation policy is composed of capital incentives (public and mixed venture capital funds, guarantee schemes); fiscal measures (R&D tax incentives); R&D funding in the public sector (e.g., through universities and institutes); government support for industrial R&D; information needed for the collaboration and meetings of organizations engaged in R&D; and various integration measures. The authors suggest the use of demand-side measures, which have so far not been systematically applied. These include a systemic policy (focused on the supply chain and clusters); legislation (standards that require innovation, technology platforms); public procurement of innovative goods; and supporting private demand (consumption subsidies for innovative goods, tax incentives for users that would increase their awareness of potential innovations, etc.). Also, Edler and Georghiou differentiate between multiple types of procurement that are available for promoting various stages in the development and diffusion of innovation. Firstly, they distinguish between *general PPI*, which sees innovation as the central goal of public procurement processes, and *strategic procurement*, which focuses on specific sectors. Secondly, they differentiate between *direct procurement* of innovative products for use in the public sector, and *indirect procurement* (catalytic procurement), in which the public sector is an intermediary in the transfer of ordered products or services from suppliers to end consumers. The third distinction is based on the characteristics of procured goods. A type of procurement associated with the supply of already developed innovative products or services is called *commercial procurement*. The other type is called *pre-commercial procurement*, whereby the state promotes innovation through public procurement, but this process does not result in final products or services.

The importance of total demand (both public and private) for innovation was later thoroughly examined in the NESTA (2010), with an emphasis on recommendations for policies that would involve potential bidders early in the process of public procurement





in order to accelerate companies' innovation activities. But not all types of public procurement encourage innovation. The object of purchase should have certain characteristics of novelty, whereas the regular public procurement of products and services (such as paper, pens, cleaning services, etc.) does not support innovation. From the level of the EU as a whole, interest is transferred to the level of particular EU member states through the directives of the European Commission. In the area of PPI, some older member states are particularly active, such as the United Kingdom (CBI, 2006; OGC in DBIS, 2009) and Ireland (DETE, 2008; 2009); but there are also some new member states, such as Poland (ME PI in PPO PI, 2008). Due to the relevance of the topic, researchers have been devoting increased attention to this issue in recent years, which has resulted in a growing body of literature.

The studies of Rolfstam (2009), Edquist (2009), and Hommen and Rolfstam (2009) focus on the various possibilities of using public procurement as a tool for fostering innovation, based on different case studies. These papers deal with the importance of institutions for the support of a procurement system that promotes innovation; they develop a typology of policies that stimulate public demand for innovation (this process is called PDI); and they offer a new PPI taxonomy, which takes into account different environments/resources and is suitable for practical policy-making.

Even though many authors stress the importance of PPI, others, such as Uyarra and Flanagan (2010), have doubts about the possibilities of public procurement as a tool for promoting innovation. The reason for this is an inconsistency between the objectives of innovation and public interest. Therefore, they propose the development of more relevant taxonomies for PPI. They see the problem in the fact that most of the current research on PPI is based solely on case studies and not on statistical analyses of larger samples. Even Geroski (1994) wondered whether the research in the field of innovation would be better off using case studies or the concepts should be checked by using quantitative methods on larger samples. He also stresses that the case studies are relevant when it comes to researching radical (Schumpeterian) innovations, but when we are interested in how the public procurement market generally affects innovation, which means investigating incremental innovations, then it is appropriate to use the econometric model (Geroski, 1994, pp. 4-6).

Studies conducted on larger samples that examine the importance of demand for innovation and especially PPI are rare. The research of BDL (2003) shows that about 50% of innovations occur due to new requirements and market demands, while the development of new technologies is responsible for only 12% of innovations. Although the study does not deal only with public demand, its policy recommendations, among other elements, emphasize the importance of public procurement (BDL, 2003). Aschhoff and Sofka's paper (2009) compared the effectiveness of PPI with three other channels (cooperation with universities and institutes, R&D subsidies, and regulation) on a sample of more than 1,100 German companies. Their research showed that the public procurement and knowledge spillovers between the private sector and universities or institutes significantly affect the commercial success of innovation. A research conducted in the US incorporated PPI and R&D investment into a growth model (Slavtchev & Wiederhold, 2011). The results indicate a positive effect of PPI on R&D investment, which in turn leads to more innovation. Another study examined the impact of R&D subsidies and PPI on R&D investment (as an innovation input) and on the revenues from innovative products and services (as an innovation output) (Guerzoni & Raiteri, 2012). It provided evidence of PPI having a stronger impact on both compared to the R&D subsidies.

## ANALYSIS OF PPI RESEARCH

As can be seen in the past century, in many cases the public procurement system was not used intentionally to stimulate innovation, but it happened accidentally (Nyiri et al., 2007; Tsipouri & Athanassopoulou, 2013). US agencies, mainly related to the military sector, usually published calls for tender in a way that enabled their procurers to create innovative solutions. Later, these innovations would diffuse from the defense sector to be used in the products or services of the civilian sector (e.g., the use



of microwaves in the household ovens, the internet, GPS system, etc.). At first innovations were not caused by either target or centrally defined policies, but by the actions of individual ministries and agencies in accordance with their own rules and policies (Edquist, 2009). Other developed countries have also adopted special programs, out of which innovative solutions emerged as a result of participating in public procurement. Examples from the book by Rothwell and Zegveld (1981) show numerous examples of public procurement having an impact on the promotion of innovation in the second half of the twentieth century.

As already mentioned, in the eighties and nineties of the 20<sup>th</sup> century, the interest for fostering demand-side oriented innovation policy measures somehow disappeared, but the papers of Edquist and Hommen (1999) and Edquist et al. (2000) once again drew attention to additional opportunities of such innovation policies. On the basis of these initiatives, at the beginning of the 21<sup>st</sup> century, the EU started a few projects to research this issue (Aho et al., 2006; BDL, 2003; Edler et al., 2005; EU & OECD, 2011; Georghiou et al., 2003; Nyiri et al., 2007). Since then, a growing number of national and international research institutions (DETE, 2008; FORA & OECD, 2009; MEE, 2010; ME PI & PPO PI, 2008; OGC & DBIS, 2009) and scientific papers (Arlbjørn & Freytag, 2012; Edler, 2009; Edler & Georghiou, 2007; Edquist & Zabala-Iturriagagoitia, 2012; Hommen & Rolfstam, 2009; Kalvet & Lember, 2010; Kattel & Lember, 2010; Lember et al., 2011; Uyerra & Flanagan, 2010) have explored different aspects and possibilities of the public procurement system which influence the formation of innovation in the economy.

After thoroughly exploring the listed literature on PPI case studies, we present the following results. The cases were divided into two major groups:

- 1) the first group comprises general policy measures (20 cases) aimed at creating an environment conducive to the emergence of innovation, as a result of public procurement processes;
- 2) the second group covers the creation of concrete innovative products and/or services that results from participating in public procurement (37 cases).

For each case, we determined the challenge/problem that an innovation or program solves (aging, ecology, sustainable development, health, etc.). In the first group, there was more effort to improve the competitiveness of enterprises, to build and develop a more efficient public procurement system and to systematically address environmental issues and energy efficiency. In the group of specific products or services, the most important issue was infrastructure (communications, information technology, transportation), followed by the so-called green innovation. It seems that the products/services related to caring for the elderly or sick people are not profitable enough and therefore the analyzed cases include less of these kinds of innovations. Examples from the defense sector are not so important because they only come from the USA, while most of these cases come from European countries. This is to be expected, since the USA is a military superpower, while the EU is primarily an economic community. The EU was also quite divided until recently, consisting of small states that would buy their arms from the major powers such as Russia and the USA.

A review of the geographical distribution of PPI cases shows significant imbalances between the developed countries and those that are at the middle stage of their development (e.g., transition countries). Examples come mainly from the United States, United Kingdom, Germany, the Netherlands and the Nordic countries. The practice of creating general policy measures and environments conducive to innovation is present mostly in the United Kingdom and slightly less in Denmark and the Netherlands, while the examples of creating individual products and services mostly come from the United Kingdom, followed closely by Sweden and Ireland. One probable reason for this is their awareness of the existence and the importance of PPI, which has been present for many years. Also, this analysis only occasionally mentions the countries of Central and Eastern Europe (CEE) that intentionally apply demand-side innovation policies (Edler, 2009). In those cases, we found only two innovations that were created based on PPI principles: one in Poland and one in Estonia. We noticed the same features after examining the papers from the May 2013 Conference on pre-commercial procurement and procurement of innovative solutions (PSNRW, 2013), which included only the cases from advanced (European) countries (Germany, the United Kingdom, Belgium, the Netherlands, Spain, France, Italy and the USA).



## DISCUSSION AND CONCLUSION

Our literature review suggests that public procurement can indeed have a positive impact on the innovativeness of a company or a country. Until now, as the analysis shows, only more developed countries used this policy instrument intentionally. Most of the interested parties in smaller transitional economies remain unaware of such possibilities, even though occasionally some of them unintentionally create innovations as a result of public procurement processes.

The basic feature of public procurement is the focus on the equal treatment of all suppliers, effective competition and technical efficiency. This results in regulations and guidelines on how to act in public procurement procedures, such as the EU guidelines and regulations like the Government Procurement Agreement (GPA) of the World Trade Organization (EC, 2013; WTO, 2013). On the other hand, the policy to promote innovation through public procurement (PPI) is not strongly directed at ensuring maximum competition and a level playing field because it also strives to create novelties and positive externalities, which induces market inefficiencies. In order to achieve spillover effects from innovations, governments must be included in the interactive learning and collaboration market, which is contrary to the principles of the GPA (Kattel & Lember, 2010; Valovirta 2012). The mentioned authors point out the difficulties some EU member states face when trying to establish a clear PPI policy. PPI presupposes relatively high political and administrative capacities, which transition countries often do not have and cannot easily obtain because they have to comply with the WTO principles. In addition, PPI requires a high level of existing competition in public procurement in order to become a serious tool of innovation policies (Lember et al., 2011), which is often not the case in developing countries. Developed countries tend to have greater policy capacity and competitiveness in the market. Therefore, it is wise for them to continue with PPI policies, because they are more likely to be successful in the context of following the GPA and EU directives.

Our recommendation for smaller transition countries is to emulate the models that have already worked in practice in more developed economies, and to improve their procurement systems in the direction of incorporating PPI. The implementation of such an instrument could benefit both the suppliers, who would create innovations and improve their overall competitiveness, and the buyers, who would get access to more advanced products and services.



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# Corporate Governance in Slovenia: Measuring Quality by Applying the SEECGAN Index

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## *ABSTRACT*

Corporate governance has become an important and often discussed topic due to numerous cases of corporate fraud, accounting scandals and other organizational failures. The research in the field of corporate governance concentrates on the topics of the corporate governance quality and its measuring. Various institutions and researchers have introduced a variety of indices of the corporate governance quality. For the survey presented in this paper the SEECGAN quality index of corporate governance was applied and the results of the preliminary research conducted in Slovenia are presented.

*Key words: corporate governance, corporate governance rating, corporate governance index, SEECGAN index, Slovenia*

## INTRODUCTION

Companies need to be governed and managed in order to survive and prosper. With the separation of ownership of the company and its management, where managers became owners' agents, self-interested managers have the opportunity to take actions that benefit themselves, with shareholders and stakeholders bearing the costs of such actions. This is referred also as agency problem (also Principal-Agent-Conflict) and the costs resulting from this problem are described as agency costs. Therefore, some type of control and monitoring are needed in the organization that is referred as corporate governance (e.g., Müller-Stewens & Lechner, 2005). Research in this field is concentrated around the main question of good governance, which is the one that considers interests of different groups of stakeholders as much as possible.

Corporate governance has become especially an important and often discussed topic (in professional and academic sphere) due to numerous cases of corporate fraud, accounting scandals and other organizational failures many of which culminate in lawsuits, resignations, and bankruptcy. Common and central feature to these stories is the assumption that somehow corporate governance is to blame – that is the system of checks and balances designed to prevent such abuses by managers failed (e.g., Larcker & Tayan, 2011). Formal legislation, a series of formal regulations and informal guidelines, recommendations, codes and standards of corporate governance have been established that try to determine good governance and to prevent or dissuade potentially self-interested managers from engaging in activities detrimental to the welfare of shareholders and stakeholders.

Measuring of the quality of corporate governance is still a relatively new concept (Tipurić et al., 2014). One of the recently developed indices the SEECGAN index which was created for former socialist countries in the south-east Europe and is the result of joint work of members of SEEGAN network (South East Europe Corporate Governance Academic Network). The index has been introduced in several countries (i.e., Croatia, Bosnia and Herzegovina, Serbia, Montenegro, Slovenia and Macedonia). In the contribution we present the results of preliminary research conducted in Slovenia.

## WHY CORPORATE GOVERNANCE MATTERS

The separation of ownership of the company and its management, where managers became owners' agents, leads to agency problem (also Principal-Agent-Conflict) and the costs resulting from this problem are described as agency costs. Namely, self-interested managers have the opportunity to take actions that benefit themselves and shareholders and stakeholders are those that bear the costs of such actions. For this reason some type of control and monitoring is needed in the organization. Such efforts (institutional, process and instrumental solutions) are referred to as corporate governance (e.g., Müller-Stewens & Lechner, 2005). Corporate governance is the system by which companies are directed and controlled (Cadbury, 1992). Moreover, corporate governance is often identified as a pure concept of control. In that sense, it deals with the ways in which suppliers of finance to corporations assure themselves of getting a return on their investment (Shleifer & Vishny, 1997). Corporate governance has become an important feature of the investment management process. It is now recognised as being a key business discipline which can contribute to the financial stability and growth of any corporation, or, if ignored, can lead to the downfall of corporations both large and small (Beckley & Parker, 2005).

Research in this field is concentrated around the main question of good governance, which is the one that considers interests of different groups of stakeholders as much as possible. Especially important issues refer to relationships between relevant stakeholders groups and top management. Owners (shareholders) are considered to be only one among different groups of stakeholders, even



though they are in certain environments among the most influential ones. In the USA and United Kingdom the shareholder-centric view prevails, which holds that the primary responsibility of a company is to maximize shareholders wealth. Other countries tend toward a stakeholder value view, which holds that obligations toward stakeholders such as employees, suppliers, customers, and local communities should be held in equal importance to shareholder returns. It means that the governance system that maximizes shareholder value might not be the same as the one that maximizes stakeholder value (e.g., Larcker & Tayan, 2011).

The importance of corporate governance has been magnified worldwide, especially due to proliferation of numerous scandals and crisis, namely cases like Enron, WorldCom, Adelphia Communications, Tyco International, Parmalat, Satyam Computer Services, etc. Due to globalization and complexity of modern corporations, such failures had even more detrimental impact for public confidence in securities markets. The reaction to these major corporate and accounting scandals in the United States was embodied in the Sarbanes–Oxley Act in 2002, with much stricter rules publically traded companies needed to comply with. This Act, as well as the other related American legislation, also influenced the European Union actions concerning this matter (Naciri, 2008).

Corporate governance is needed because more detailed information about corporate projects allow investors to assess the corporate growth potential better and to invest their money into companies that can generate the highest returns. Therefore, if all companies were to conceal information about their activities, a more inefficient allocation of capital would arise, leading to lower economic growth. Hence, a re-distribution of wealth between competing companies caused by a higher level of disclosure seems less harmful for the economy than the misallocation of capital caused by the lack of transparency. As such, mandatory rules that impose more disclosure enable economies to achieve a more optimal outcome (Martynova & Renneboog, 2010).

Adopting a specific corporate governance regulation is that it forces companies to commit credibly to a higher quality of governance (Becht et al., 2005). Even if companies initially design efficient governance rules, they may break or alter them at a later stage. Investors anticipate this and are willing to provide firms with funds at lower costs only when companies find ways to commit credibly to good governance. However, credible pre-commitment mechanisms may be expensive or unavailable in countries lacking an effective institutional framework (Doidge et. al., 2004). For instance, a well-functioning infrastructure (in terms of internal control structures, audit mechanisms, voting procedures at the annual meetings etc.) is required to enable investors to verify the information that companies disclose (Black, 2001).

In Europe, the recommendatory codes for good corporate governance are the basis of the annual reports on Corporate Governance for companies listed on regulated markets. This is a direct result of the European Parliament and Council Directive 2006/46/CE, of 14th June 2006.

## CORPORATE GOVERNANCE IN SLOVENIA

Corporate governance in the Republic of Slovenia (RS) is particularly important due to the transformation of the equity ownership company system. The RS traces its corporate governance beginnings to the 1990s when the country initiated ownership transformation of companies (ZTLR et al., 1992). Companies with the social capital as an equity source have been on the basis of a law transformed into the companies with the equity capital in private ownership. After the membership in the European union (EU) directives and regulations have been implemented and brought about positive legal effects in corporate governance following 2004.



Corporate governance of companies in the RS has been implementing for 20 years and positive assessments are provided on the basis of the development of Slovenian codes of corporate governance and legislation on the field in these years.

Legislation concerning corporate governance of joint stock companies in the RS shows the following features:

- Slovenian legislation on corporate governance is improving:
  - stockholders acquired more power in making decisions at stakeholder meetings (ZGD-1C, 2009);
  - the principle of disclosure and transparency of corporate information was emphasized (ZGD-1C, 2009);
  - corporate governance statement was enacted (Djokić, 2009);
  - remuneration policy was instituted (Djokić, 2011);
  - revised accounting and revision Directives of the European Commission (EC) were implemented to improve reporting and revision of corporate information (Djokić, 2008);
  - revision commissions of supervisory boards was established (Djokić, 2007);
  - public control of auditors was introduced (Djokić, 2008).
- Standards and principles aiming for better and more effective corporate governance and supervision in practice are being modernized (Djokić, 2011).
- Professional associations and institutes regularly monitor improvements within their scope of activities, inform their members about the innovations and comment on them (Djokić 2011).

The major question therefore remains, could we be satisfied.

The development of good and effective corporate governance cannot be based on written rules and standards alone. Effective corporate governance is demonstrated by the implementation of the rules in practice and through promoting the objectives of the corporation. The Codes could be of a big help in providing better practices of corporate governance in a particular company. If the management bodies are prepared to use their recommendations properly, the Codes could be an orientation on how to execute particular job or an operation. Practical behavior and factual performance of the duties of a particular management body of a company is significant.

## HISTORY OF CODE EDITION IN SLOVENIA

The first Slovene code of governance of public companies came into force in March 2004. It was adopted by the Ljubljana Stock Exchange, the Managers' Association of Slovenia and the Slovenian Directors' Association (hereinafter referred to as: 2004 Slovenian CG Code). The changes and supplements of the Code from 2004 were adopted by the same signatories on December 14 2005 (hereinafter: 2005 Slovenian CG Code). The next changes of the 2005 Slovenian CG Code have again been brought by



the same signatories and were adopted on May 5 2007 (hereinafter: 2007 Slovenian CG Code). On December 8, 2009 a new code was enforced (hereinafter: 2009 Slovenian CG Code) and is still on the power in Slovenia (hereinafter: 2009 Slovenian Code).

The purpose of the 2007 Slovenian CG Code has been to define in more detail the governance and management principles of public companies (pc), as well as recommend the same governance principles to the companies, which haven't gone public, but have the form of Joint Stock Company. The 2007 Code leaned heavily on the principle 'Comply or Explain' in all the areas of potential conflicts of interest. The key element of this principle is disclosure. According to the 2007 Slovenian CG Code, the purpose of publicly disclosing a company's declaration of compliance with the Code has been in informing its shareholders, potential investors and other interest groups of the company's system of corporate governance and the related corporate governance risks. In light of the above, the objective of the Code was to urge companies to provide sufficient information on their corporate governance practices (Kodeks upravljanja javnih delniških družb, 2007). The 2007 Slovenian CG Code also encouraged substantial shareholders, institutional investors and the state to publicly reveal the company's investment policy. It further encouraged minority shareholders to be more active, by stipulating the right of each shareholder to attend the general meeting and to present their opinion on the items on the agenda, as well as ask questions and provide suggestions relating to the agenda of the general meeting, has been explicitly written, as in some companies the minority shareholders were not allowed to exercise these rights. Some amendments were adopted aiming at improving the transparency of companies (i.e., the provisions about the information that has to be published upon convening of a general meeting and after the general meetings were held).

Since the companies as well as the public have become increasingly familiar with the provisions of the previous 2007 Slovenian CG Code all the provisions of the amended 2009 Slovenian CG Code have the nature of recommendations, which are not legally binding. The pc should however inform investors of any deviations from the Code and reasons for them. All such deviations must also be disclosed by non-public joint stock companies which base their Corporate Governance Statement on this Code (Kodeks upravljanja javnih delniških družb, 2009, pg. 2).

The year 2009 represented an important pillar in the development of the corporate governance in RS. The 2009 Slovenian Code introduced at that year the Corporate Governance Policy (CG Policy) and its content for the first time and the Slovenian Companies Act (ZGD-1-UPB<sub>3</sub>) enacted the Corporate Governance Statement at the same year, too. Both legal acts brought positive changes on the field of corporate governance and especially enlarged the transparency of the pc in RS.

## SOME ASSESSMENTS OF THE DEVELOPMENT AND POSITIVE LEGAL CONSEQUENCES OF THE CG IN SLOVENIA IN THE PAST

Soft provisions of the Slovenian CG Codes which are non-binding created a suitable legal basis for the development and better understanding and implementation of CG in Slovenian public companies. Besides, the CG Statement has become a requisite element of the public companies' annual reports (Djokić, 2009, 2011a). Being an obligatory instrument for public companies, the corporate governance statement included the material information which should be revealed to the shareholders.

Disclosure and transparency were introduced by imperative rules of law and soft law. The combination of both techniques established legal basis which helped to improve corporate governance of public corporations, not only in words but also in practice.



Following the examination of the annual reports of the joint-stock companies which entered in the first Ljubljana Stock Exchange listing of 2008, 2009 and 2010 one could perceive an improvement in the disclosure of the data in the annual reports and enlargement of the transparency. For example, the examination of the annual reports of pc in the first Stock Exchange listing for the year 2008 has shown an additional improvement in disclosing of the data's on the remuneration of supervisory board members, considering that the reports, as a rule, disclose them by structure and by individual members. The frequency of disclosure and transparency of the data of corporate governance and the potential conflicts of interest in this field from 2009 to 2010 are ever greater in the annual reports of Slovenian pc (Djokić 2012).

Ljubljana Stock Exchange made another analyse of the Corporate Governance Statements in 2012 (LJSE Analyse, 2012). This Analyse included the disclosure of the explanations from the SCGC 2009 of the corporations, included in the prime listing of the Ljubljana Stock Exchange for the years 2010 and 2011.

LJSE Analyse shows that in the first listing public corporations showed the biggest deviations from the following SCGC 2009 principles:

- definition of goals in the company's statute;
- using information technology to inform and implement sessions of the supervisory board;
- the principle regarding payment to the members of the supervisory board;
- appointing an audit and personnel commission;
- disclosing benefits given to the members of the management and supervisory board.

The LJSE Analyse also showed that in certain cases, companies still fail to disclose all deviations, consider them irrelevant or interpret them in different ways. It has estimated this attitude to be changed as soon as possible because it could destroy the very intent of the "comply or explain" principle in Slovenia. This principle is effective when a high level of transparency is achieved through authentic and complete disclosures including specific explanations of deviations, alternative practices and reasons for it.

The LJSE Analyse besides stated that the general level of corporate governance in Slovene companies is relatively good. Overall harmonization of CG Statements with good practices of corporate governance has been improved recently. The total number of deviations has been lower, while the proportion of quality deviation explanations has been significantly higher (LJSE Analyse, 2012, pg.3).

The fact of the practical improvement of reporting of the pc has brought hope for better corporate governance in RS. It has additionally showed that the practice in the RS is following the legislation demands and has been developing in harmony with the regulations of the ZGD-1-UPB3 and the provisions of the Slovenian CG Codes.

The question however remained opened, if it was going to be possible to find out, whether companies had improved their corporate governance practices and not only published some data in the statements on corporate governance and their reports. The answer to such a question would indeed depend on the ability of companies to precisely measure and anticipate different areas and levels of the corporate governance (model, ownership structure, risk, etc.) which are in the domain of the corporate governance.

The present situation is calling Slovenia to become more aware of the importance of competent and effective corporate governance model. The creation and use of an economically successful model, should be supported by the use of different legal techniques of regulators and others, involved in the regulatory process. Soft law and obligatory provisions, enacted by laws should be used and combined. (Djokić, 2013)





## MEASURING CORPORATE GOVERNANCE QUALITY

Measuring the quality of corporate governance could be an important activity in the process of developing an effective corporate governance model. It is still a relatively new concept (Tipurić et al., 2014). Different governance ratings have been developed by consulting companies (e.g., Risk Metrics/ISS, Governance Metrics International (GMI), The Corporate Library (TCL)) that aim at ranking companies according to the set of criteria that they believe measure governance adequacy and effectiveness. Academic researchers have also put considerable efforts toward the development of models to measure governance quality. The typical model takes the form of a corporate governance index that aggregates several input variables into single metrics (e.g., Larcker & Tayan, 2011).

Corporate governance index is constructed at a country level using accounting and market data of samples of nonfinancial firms listed in the relevant domestic stock markets. Hence, it captures corporate governance quality specific to a universe of firms which are likely to be comparatively more exposed to market discipline. For this reason, the finding of no improvement in governance for these firms would likely signal the lack of improvements for the corporate sector as a whole. On the other hand, the finding of improvements for these firms could signal either that improvement have occurred in the corporate sector as a whole, or that improvements are likely to be found specially among firms subject to market discipline (Nicolò et al., 2006).

Investors believe that good corporate governance reduces risk and leads to improved shareholder value. Historically, it is difficult to quantify improvements in shareholder value that is attributable directly to corporate governance improvements and/or good behaviour (Beckley & Parker, 2005).

One of the indices created recently is the SEECGAN Index of Corporate Governance (hereinafter SEECGAN Index) which was created and presented in 2014 as a result of the joint efforts of the members of the South East Europe Corporate Governance Academic Network. The SEECGAN Index is designed and adapted with regard to the situation and the specificities of the business environment in the selected countries of the South Eastern Europe (Croatia, Bosnia and Herzegovina, Serbia, Montenegro, Slovenia and Macedonia) (Tipurić et al., 2014).

The SEECGAN Research - Slovenia 2014 (Djokić, Duh, Kladnik, & Martinčič, 2014) has been conducted in the Republic of Slovenia on the basis of the SEECGAN Index. Unlike other measures of corporate governance commonly used in different studies, this index captures all major aspects of corporate governance: board structure and functioning, conflict of interest, shareholders' rights, corporate social responsibility and disclosure and transparency.

## EMPIRICAL RESEARCH

### RESEARCH METHODOLOGY

In order to measure a level of good governance practices implementation and to verify whether Slovenian companies perform better with regard to that, a composite indicator was applied. The SEECGAN Index of Corporate Governance that was applied covers seven segments as follows:



- Structure and Governance of Boards
- Transparency and Disclosure of Information
- Shareholders' Rights
- Corporate Social Responsibility
- Audit and Internal Control
- Corporate Risk Management
- Compensation / Remuneration

These seven segments are presented by a total set of 98 questions that must be answered in the affirmative (YES) or negative (NO), depending on the governance practices in analysed firms. Affirmative answers imply good corporate governance practices and vice versa. A ponder is assigned to each answer, wherein the minimum value of the weight equals 1, and the maximum value of the weight equals 3. The maximum score for each segment is 10 (best possible practice), and the minimum is one (worst possible practice). The overall SEECGAN Index score is the average value of all seven segments with 1 being the lowest value, and 10 being the maximum index value.

## SAMPLING AND DATA COLLECTION

In the SEECGAN Research - Slovenia 2014 22 companies were included in the sample. The sample consists of two groups of companies. The first group represents the prime quotation of the most profitable companies with the highest traded shares: Gorenje, d.d., Velenje, Intereuropa, d.d., Koper, Krka, d.d., Novo mesto, Luka Koper, d.d., Koper, NKBM, d.d., Maribor, Petrol, d.d., Ljubljana, PS Mercator, d.d., Ljubljana, Telekom Slovenije, d.d., Ljubljana, Zavarovalnica Triglav, d.d. The second group of companies represents the standard quotation of companies with a higher level of transparency: Abanka Vipa, d.d., Aerodrom Ljubljana, d.d., Delo prodaja, d.d., Iskra Avtoelektrika, d.d., Istrabenz, holdinška družba, d.d., Kompas Mejni turistični servis, d.d., Mlinotest živilska industrija, d.d., Nika, d.d., Pivovarna Laško, d.d., Pozavarovalnica Sava, d.d., Sava, d.d., Terme Čatež d.d., Unior, d.d.

## RESULTS AND DISCUSSION

In this section we present the aggregated results of SEECGAN Index for all 22 companies included in the sample and based on the data's, published in the year 2013 (Table 1).



Table 1: SEECGAN Index for Slovenia

SEECGAN Index	Max.	Min.	Mean	Median	Standard deviation	Variance
Total	8.16	2.26	5.49	5.26	1.71	2.92
Structure and Governance of Boards <sup>1</sup> :						
- Of supervisory board	8.65	1.62	5.66	5.95	2.19	4.80
- Of management board	8.15	0.74	4.49	4.44	2.12	4.50
Transparency and Disclosure of Information	10.00	3.53	6.62	6.18	1.88	3.54
Shareholders' Rights	7.10	0.97	4.79	5.00	1.60	2.55
Corporate Social Responsibility	10.00	0	3.66	3.81	2.55	6.51
Audit and Internal Control	10.00	3.33	6.36	6.04	2.49	6.20
Corporate Risk Management	10.00	3.13	7.61	8.75	2.26	5.12
Compensation / Remuneration	9.06	0.63	4.74	4.84	2.27	5.15

Source: The SEECGAN Research - Slovenia 2014 (Djokić, Duh, Kladnik, & Martinčič, 2014)

<sup>1</sup> The two tier system is a corporate structure system that consists of two separate boards that work together in order to govern a business, the "Management Board", and the "Supervisory Board" each of these serves a particular purpose.

The quality of corporate governance is evaluated as first-class, if the value of the SEECGAN index is higher than 7.5, good if the value is between 5.00 and 7.5, unsatisfactory if the value is between 2.5 and 5.00, and poor if the value is lower as 2.5. The data in the table 1 shows that the average value of the SEECGAN index of the corporate governance quality of the listed companies in the Republic of Slovenia is good (5.49). The average deviation from the mean is 1.71. Half of listed companies have reached an average value of SEECGAN index greater than 5.25.

Companies included in the sample achieved the highest average value of the quality of corporate governance (the SEECGAN index) in the segment of risk management; in this segment they are on average evaluated as first class (7.61). Median shows that 50% companies have SEECGAN index value in the segment of risk management higher than 8.75, which is for the Slovenian company very praiseworthy. In the risk management segment, we studied the development of risk management of each company. All companies developed a system of risk management, and perform identification and classification of risks, measure and manage financial risks (i. e., currency, interest rate, price, and credit and liquidity risks). Most of the studied companies have special department/division of risk management which primary responsibility is to measure and manage operative risks and strategic risks.

The lowest value is achieved in the field of social responsibility; companies are on average evaluated unsatisfactory (3.66). In the segment of corporate social responsibility (CSR) dominate the largest deviation from the mean, namely 2.55. In this segment, we studied the compliance with the guidelines of corporate social responsibility of each company. Only one company has a board member/department whose primary responsibility is CSR and holds special meetings to engage with stakeholder groups to solicit their opinions in a formal way. Two companies prepared CSR Report according to the UN Global Compact, Global Reporting Initiative, B-Corporation or other internationally recognized reporting standards. Public calls or similar transparent procedures for financing projects in the local communities and company donations are used in five companies. Good corporate governance is carried out in segments of the structure of the supervisory board (5.66), the segment of transparency and disclosure (6.62) and in the segment of audit and internal control (6.36). In the future Slovenian public companies will have to pay attention to the quality of corporate governance especially to the segment of shareholder rights, corporate social responsibility, structure of the board and remuneration of the members of the board and the supervisory board, as the practice in these areas is unsatisfactory.

## CONCLUSIONS

Corporate governance has become an important and often discussed topic due to numerous cases of corporate fraud, accounting scandals and other organizational failures many of which culminate in lawsuits, resignations, and bankruptcy. Increasingly topical issue is becoming measuring the quality of corporate governance. High quality of corporate governance has those companies which have and meet the standards of corporate governance. Standards are in Slovenia recorded in the 2009 Slovenian Code, which was adopted by the Ljubljana Stock Exchange, d. d., Association of Slovenia and the Association Manager. The Slovene code of governance of public companies came into force in 2009 and has the nature of recommendations, which are not legally binding. Companies can summarize the description of their corporate governance system in the Corporate Governance Statement determined by the Slovenian Companies Act.

In addition to the recognition of the importance of the quality of corporate governance, the question arises of measuring quality. To this end, various researchers have introduced a variety of indices of quality of corporate governance. For the survey presented in this paper the SEECGAN quality index of corporate governance was applied, which was designed and adapted with regard to the situation and the specificities of the business environment in the selected countries of the South Eastern Europe.

Results of the preliminary research conducted in Slovenia shows that the average value of the index SEECGAN quality of corporate governance of listed companies in the Republic of Slovenia is good (5.49). The highest average value of the quality of corporate governance have public companies reached in the segment of risk management, evaluated as first class (7.61), the lowest value in the field of social responsibility, where they were evaluated unsatisfactory (3.66). In the future Slovenian public companies will have to pay attention to the quality of corporate governance especially to the segment of shareholder rights, corporate social responsibility, structure of the board and remuneration of the members of the board and the supervisory board, as the practice in these areas is unsatisfactory.

Slovenian companies with high quality of corporate governance have the possibility to differ from other competitors. Knowing the quality of corporate governance of individual companies, investors can better assess the potential growth of their investment in the company, thus creating higher returns.



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# Organization of Complex Sports Events Projects

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## *ABSTRACT*

The organization of major sports events is very complex, time limited, goal oriented process, connected with many different, and sometimes hard to predict risks, which are the responsibility of a certain group of people. According to those features, we need to observe organization of sports events management from the project management point of view. The paper identifies different elements influencing the complexity of major sports events and via those also the most appropriate organization model for such projects. In designing the project organization for complex sports events projects, flexibility, formalization, general centralization and a low level of differentiation needs to be ensured to allow quick communication, coordination and control.

European Basketball Championship – project EuroBasket 2013, the largest sports event ever organized on Slovenian ground, was used for in depth case study analysis of the subject. The most suitable form for very complex major sports events proved to be pure project organization.

*Key words:* **project, project management, project complexity, sports event, project organization, EuroBasket 2013.**

## INTRODUCTION

Sports events are the main event of the organizational culture of sport with an impact on the promotion of environment in which they take place (local communities, regions, countries), and the development of tourism and other economy. They also have great importance for the development and nurturing of sports culture, because they can foster motivation for sport and recreational activities, and therefore represent the most important form of promotion of sport (MIZŠ, 2013).

National laws most often define sports events as an organized sporting events and competitions. These are events where people publicly get together for recreational reasons, which may be competitive or not competitive character (Kolar & Zaletel, 2013). Among the most important sporting events we can count sports gathering, general sports - cultural events, congresses, symposia, seminars and competitions (Šugman, 1995). A special place among the sport events have major international sports events, which include the Olympic Games, Mediterranean Games, Universiade, World and European Championships (including Youth), World Cups and Grand Prix meetings and tournaments.

Competitions are among the most important and the most frequent sports events. They can be divided in championship and friendly competitions (official or unofficial), large and small, open or closed type, quality and mass and the global and uniform (Šugman, 1995).

According to the characteristics of major sporting events it is necessary to consider them as projects (Brown, 1998, adapted from Kolar & Zaletel, 2013). Šugman (1995) defines project characteristics of major sporting events:

- The major sporting events are creating changes that generate benefit to the development of the environment, sport and the popularity of the sport in general.
- The major sporting event is time-limited activity, which has to be realized within a specified period, with predefined beginning and the end.
- The organization of such competitions has short-, medium- and long-term goals and objectives.
- Pri organizaciji takšnih tekmovanj organizatorji načrtujejo rezultate projekta, ki izhajajo iz njihovih ciljev.
- Large international sports competitions have unique and unrepeatable form and content.
- The organization and implementation of such competitions are the responsibility of the project team set up by the official rights holder for the organization of this competition.
- The organization of major sporting events involves a variety of tangible and intangible resources, which are necessary for the implementation of the project.
- The organization of such competitions requires multidisciplinary and therefore the involvement of experts from various fields that are important for the successful implementation of the project.

The organization of major sporting events is an extensive project that represents a great development opportunity for the local environment, as they can within a specified period of time integrate and activate different potentials and resources for the realization of development projects. With the successful integration of various resources (financial, material, human and other) both short and long-term benefits can be achieve. Short-term benefits are associated with economic and promotional impacts for the organizer's local environment, while the long-term benefits relates to the legacy of the project, which has a positive effect on the modified image of the environment and improving the quality of human life (Watt 2003, summarized by Kolar et al.,





2010). Therefore, we are talking about economic, social and environmental factors that affect many sporting events and generate positive results (Getz 2000, summarized by Hanlon, 2002).

Preuss (2006) discusses the positive and negative legacy of sporting events. Positive are new event spaces, new infrastructure, revival of the city, improved international standing, tourism development, improvement of public welfare, new jobs, new business opportunities for the local environment, site promotion, increasing national and cultural consciousness, new partnerships and strategic alliances, new experience and know-how. The negative legacy is represented by high investment costs, investments in redundant infrastructure, high indebtedness of the public sector, temporary problems of overcrowding (crowd of people, environmental pollution), the permanent loss of visitors, increasing the lease of land and only a temporary increase in employment and business activities.

The organization and execution of large sports competitions is a big, complex and very important sports project. The management of major sports competitions requires managing time limited and unique events, which is the responsibility of a group of people, namely of the project team. Successful completion of major sports competitions requires a number of tangible and intangible resources, and interdisciplinary treatment of all challenges. With these events we achieve short-, medium- and long-term goals of the organizers. That speaks in favor of the fact that there are many related features between managing large sports competitions and managing projects.

In the profession of project management a complex projects are very time-consuming and risky projects, which require engagement of large number of individuals and organizations, and which, because of their potential strategic importance and engagement of many stakeholders represent some kind of disorder to the regular ongoing operations (Hauc, 2007).

Complexity criterias of large sports competitions are, for example, the number of organizations involved in the preparation and execution of the event, the number of sponsors, the number of included sports, the number of participating countries / competitors, the duration of the event, the magnitude of the event, and others. Kolar & Zaletel (2013) point to the complexity of such projects in terms of the involvement of a large number of factors and considerations that affect the performance and achievement of objectives which should be coordinated in the management process.

To achieve the successful organization and execution of complex sports events and therefore complex projects, it is necessary to deal with them in accordance with the appropriate project management methodologies. Till recently authors have not devoted sufficient attention to the integration of project management methods and techniques in the organization and execution of complex sporting events.

In the following part of the paper we address a question of setting up appropriate project organization to ensure successful realization of complex sporting events. In doing so we are using an in-depth analysis of the case of the project EuroBasket 2013, as the basis for verifying hypotheses. EuroBasket 2013 is the latest successful example of a complex sports project in Slovenia, which is also the biggest sporting event ever hosted by the Republic of Slovenia (Ivašković, 2014). In the process of the most elite European competition, which lasted 19 days, 24 countries was attended. The organization has involved more than 6000 participating people and over 400 partners, while over half a million euros of net profit were created (Križnar, 2014). The event certainly contributed much more than it requested and can be a great example and legacy for the future organization of such sports events not only in Slovenia, but all over the world.

## MAJOR SPORTING EVENTS AS COMPLEX PROJECTS

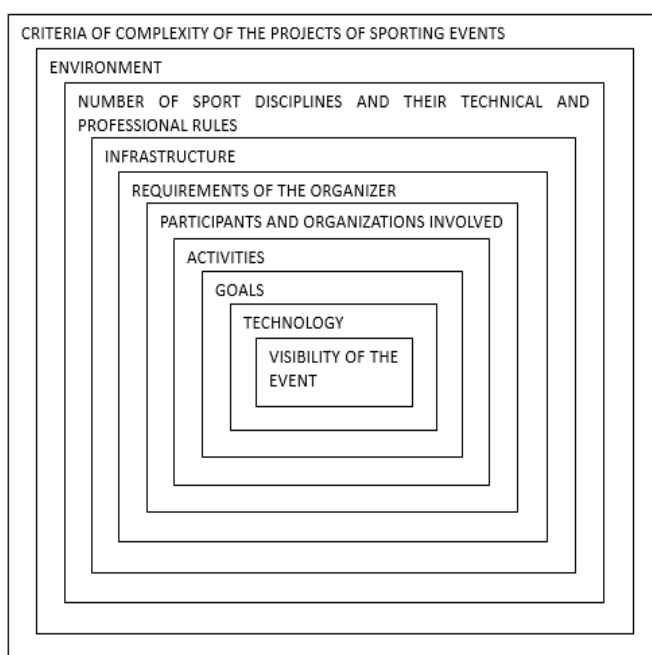
According to the criterion of scale and the expected effects, the organization and implementation of a large sporting competition represent a large, complex and very important sports project for the majority of Slovenian sports organizations. Management of major sports competitions requires management of limited duration and one-time events, for which a group of people is responsible, therefore we can talk about the project team. Successful completion of major sports competitions requires a number of tangible and intangible resources and interdisciplinary treatment of all challenges. With these events, we achieve short-, medium- and long-term goals of the organizers. That speaks in favor of the fact that between the process of management of large sports competitions and the project management there are a number of related features, while it is also true that large sporting events bear all the characteristics of projects (Kolar & Zaletel, 2013).

Preparation, organization and implementation of major sporting competitions are regarded as complex projects in terms of the involvement of a large number of factors and considerations that affect the performance objectives and need to be coordinated in the management process (Kolar & Zaletel, 2013). Projects considered to be complex in the field of project management are defined as time-consuming, risky, requiring the engagement of a large number of individuals and organizations who, because of their relevance and engagement of contractors almost represent a disorder in current operations (Hauc, 2007). Hirschman (1967, adapted from Davies & Mackenzie, 2013) recognized that the complexity is not sheer size, but the difficulty of determining the structure and process of harmonization, alignment and integration of parts into a coherent whole and dynamically react to unforeseen interdependencies and changing circumstances in a given time period.

To achieve a successful organization and execution of complex sports events and therefore complex projects they urgently need to be addressed in accordance with the relevant project management methodologies.

Figure 1 shows the criteria, which we recognize as crucial in assessing the complexity of a sporting event.

*Figure 1:* Criteria of complexity of the projects of sporting events



The environment alone in which the event takes place can be complex. The complexity of the environment is measured by the number of links it has with the project or its participants. If the area, where the event will take place, is demanding or difficult to access, this would trigger additional activities or greater efforts in arranging the venue and secure access. It would, therefore, have accounted for a further link of the project to the environment. The venue may require adjustment due to weather conditions, which are characteristic of the environment where the event will take place. These adjustments again represent an additional link of the project to the environment. The same applies if the event takes place in the vicinity of the protected area or village where we need to make sure that the event will not create a nuisance, that there will not be too much noise, crowds, etc.

The following criteria are the number of sports disciplines in which competition takes place, as well as their technical and professional rules. If there are several sports planned for the event, this represents a more complex project of sporting events. Consequently, we need to follow several different technical and professional requirements in various sports disciplines and provide all conditions for quality implementation of competition in a particular sport discipline.

Sports disciplines require adequate infrastructure, which is another criterion of complexity. The latter needs to be updated (if the existing does not meet the latest requirements) or build a new one (if we do not have such infrastructure) for organizing sports events. These may be requirements about the size of the playing surface, the distance between the playing area and space for the audience, the number of seats for spectators, security requirements (eg. an additional safety barrier between the playing surface and grandstands for spectators in hockey). Similarly, we can not organize competitions in water polo without a pool.

Next are additional requirements of the organizer which also constitute the criteria of complexity. As the number of these requirements increases, so does the complexity we have to face in the organization of the event. The most important requirement is the duration of the event, the organizer must, therefore, carry out the whole event within a specified time. Events that last longer are more complex. Requests may also be in the field of security (eg. number of emergency exits), logistics (organized transport of athletes and sports delegates), accommodation (athletes stay in 5 star hotels and nearby rooms), food (food that must be offered at the scene), etc.

The next criterion of the complexity are the participants and organizations involved. The more participants or organizations involved, the greater the complexity of the project of sporting event. Namely, we need to coordinate various interests of all involved organizations, sponsors and individuals, which may affect the implementation of the project. The necessary consensus among these key participants needs to be achieved and their goals reached, which certainly represents an important part of the complexity of the project. Participants may also be of different nationalities, cultures and races, where we must certainly take into account their specific requirements in the diet or customs.

Furthermore, the complexity of the project, sporting events, could be measured by number of activities and the links between them. Activities may in fact overlap or are interdependent. Where there are links, where we need to first stop with the implementing of an activity before we can begin to implement another, or where we have two or more activities carried out at the same time, then we can talk about the complexity of these activities.

The latter is carried out to achieve the goals of the project, which are also the criteria of complexity. Typically, you do not only strive for one goal but several. Only the basic goals that you can ask for a complex project of a sporting event are: to finish the project on time, within budget and to reach the required quality. This means that the needs and goals of the client of the project (the organizer), sponsors, supporters and, last but not least, the athletes. The organizer also has its own objectives, for example, to gain experience that will be used in future projects. As activities can intertwine so can the objectives of the project be combined. So if you achieve one goal, this may also affect the achievement of the second goal, in which case we can also talk about complexity.

The project also uses a specific technology that helps us in implementing the activities and objectives. This technology must be adapted to the project and is therefore one of the criteria of complexity. Even when we talked about the characteristics of the



project, we pointed out that every project is unique or specific. Accordingly, we must develop technology (in terms of programs) that will be best suited to simplify processes in a complex project.

The last frame in our scheme is the measure of „visibility of the event“. Complex projects of sporting events have certainly greater visibility than smaller sporting events. In the first several athletes from different countries are taking part, giving the sporting event greater weight, so it also draws more attention from the media and gains the privilege of live TV coverage transmitted around the world. Visibility means, therefore, the number of people or countries interested in the sports event and viewing it on TV screens or live. This criterion was expanded our scheme.

## ORGANIZATION OF COMPLEX SPORTS EVENTS PROJECTS

Projects can be quite different, either by their size or, consequently, the complexity of their management. Therefore, also the organizational solutions can be very different. Events related to sport, recreation and tourism, have a degree of dimension, attractiveness and complexity that require well-designed structures which contribute to successful implementation. Questions about the structure and management of the organization of the event are often pushed somewhat into the background in regard to the main presented program activities. But in reality, the elements of effective structures and management are foundations for success. Such events can not be successful without an appropriate organizational structure for planning and implementing of the event, enabling effective communication, decision-making and appropriate degree of flexibility from the organizers (Mallen & Adams, 2013).

In designing the project organization, we must necessarily take into account the legal aspect. In this respect, the project organization could be without independent legal obligations, or it may have a legal form and is therefore a legal entity. In case of large and strategically important projects, there is definitely a need for stronger legal form of project organization (Hauc, 2007). The latter is not confined to a single existing organization, but can, in case of larger projects, include organizational components of other organizations that are involved in the project (Motz, 2006, adapted from Hauc, 2007).

Given that the organizations in complex projects of sporting events are faced with sudden changes, organizational growth and great diversity, they must have a flexible and innovative structure. One that can spread horizontally on the appointment of new managers, as well as vertically when hiring at lower levels. At the same time, it must allow easy communication, coordination and control, and reduce conflicts (Hall 1992 taken from Hanlon & Jago, 2000). Slack (1997, adapted from Hanlon & Jago, 2000) and Robbins and Barnwell (1998, adapted from Hanlon & Jago, 2000) claim that we need to take in consideration three dimensions, when shaping the organizational structure, which will be faced with such a character of major sports events. These are the degrees of differentiation, formalization and centralization. Robbins and Barnwell (ibid) note that the degree of differentiation relates to the complexity of the organization. It covers the horizontal separation between units, vertical depth in the hierarchy and spatial differentiation of facilities and staff. Slack (ibid) says that the formalization impacts the way how individuals behave within the organization. In a more formalized organizations, they use comprehensive policies to solve problems. The formalization is necessary due to the number and diversity of employees coming and going at different times during the event, thus needing immediate information. Establishing the rules, job descriptions, processes, etc is therefore necessary. However, centralization is distinguishing between the frequency of decision-making at the level of management and the frequency of decision-making at lower levels. When taking important decisions, an organization must be centralized, but during the peak of the event it must become decentralized in order to achieve the objectives. In case of sudden changes, the staff must respond quickly and can not

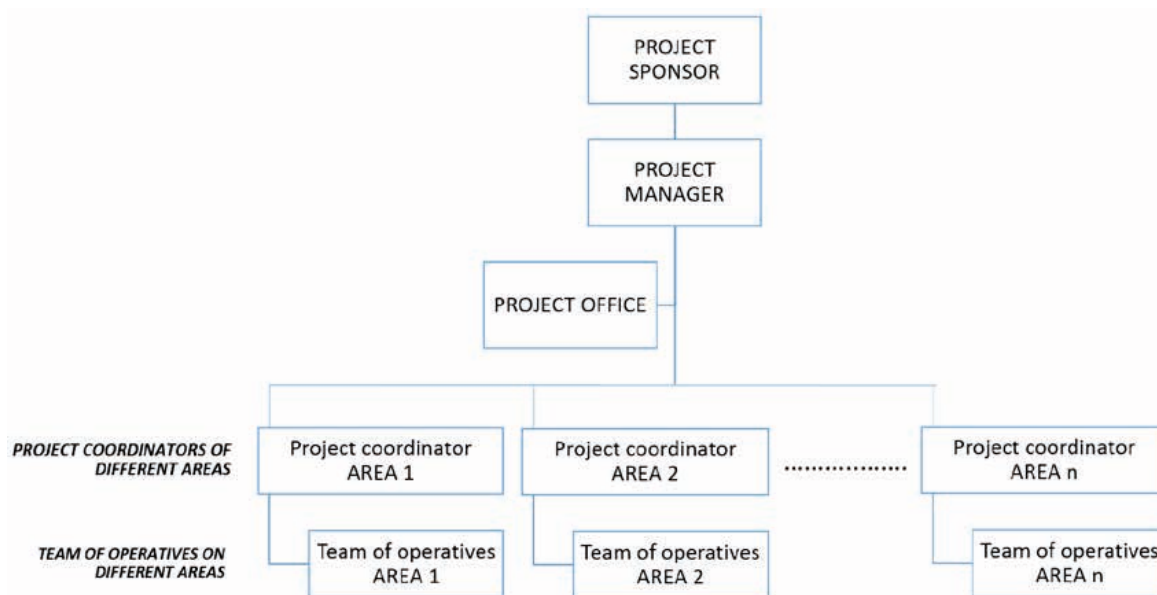


wait for the approval of managers (Robbin and Barnwell 1998 taken from Hanlon & Jago, 2000). All of these features should be transferred to the organization of major sporting events.

For complex projects of sporting events we suggest a project organization that is established for the duration of the project. This is separate from the parent organization and is exclusively concerned with the project. It is best if this temporary organization has its own management system and operates autonomously and independently from its parent organization. Thus, the organization can best adapt itself to the project and develop systems that will be best suited for the project. In this way, they will be better understood and more easily interpreted by those involved in the organization. They will also feel a greater responsibility for the project and thus greater loyalty. Their work will be more efficient and the processes within the organization will run faster. The main concern must always be for the purpose of the project and the achieving of objectives of the client, as more freedom in the operation also means greater responsibility for the success of the project. At the end of the project, such organizational structure disintegrates or shall be assigned a new project.

The Figure 2 shows the organizational structure that is best suited for the organization of the complex project of sporting event. At the top is the client of the project, the manager of the parent organization, which forms the objectives to be achieved by the project team. Therefore, he names the project manager, who will lead the project team, which could also be formed by him. The project manager is therefore primarily responsible to achieve the project objectives. We also propose the establishment of a central point - the project office, which should be at the level of administrative control office. It can take care of administrative tasks and legal issues, but mainly it connects the work on the project. Project manager appoints his assistants or coordinators in specific areas, that the project is divided to. Each coordinator is also responsible for a specific area in which he leads the operators to carry out the necessary activities. He reports about his work directly to the project manager. Artists, who are responsible for the implementation of activities in certain areas, can be internal, external or mixed. At this level, they include volunteers who are also an important link in the organizational structure of complex projects of sporting events. This organizational structure is completely flexible to absorb people in various forms of cooperation, during different periods of the project. It covers four hierarchical levels to enable rapid communication and the right level of control. It also allows the horizontal dimension when adding new fields to the needs of the project. This form is simple enough to be understood by each participant, so everyone knows exactly where in the organizational structure they are positioned, regardless of when he is integrated into the organization.

Figure 2: Organizational structure for complex projects of sporting events



Source: authors own

The complex projects of sporting events include activities which are interlinked and are to a large proportion carried out simultaneously. Therefore, it is important to implement constant monitoring and dynamic response to the constant changes in different time periods during the project. To set up a project organization, it is necessary to ensure the continuity of management and administration, and to connect the involved organizations together in a functioning system. This requires a high degree of customization on all sides. The project involves people with different skills and experiences, therefore the roles need to be well placed and rights and responsibilities of each individual need to be clearly defined. Exact plans need to be drawn that are closely followed during the project. One of these is the risk management plan, which predicts the potential risks and identifies measures to address them. Financial plan is also very important, i.e. how exactly we are planning funding. In doing so, we wish to point out that for complex projects of sporting events the influx of these funds is different, as it comes from different sources. The inflow of funds should therefore be well coordinated, subordinating all other plans, so that the activities will be implemented when necessary.

## CASE OF ORGANISING COMPLEX SPORTS EVENT IN SLOVENIA: EUROBASKET 2013

The last successful example of a complex sports project in Slovenia was the project of the organization of the European Championship in Basketball – EuroBasket 2013. This was the biggest sporting event ever hosted by the Republic of Slovenia (Ivašković, 2014). The process of the most elite European national side competition, which lasted for 19 days, was attended by 24 countries. The organization has involved more than 6,000 people, with over 400 participating partners, and has achieved over half a million Euros of net profit (Križnar, 2014). The event has certainly contributed much more than was requested, and can be a great example and sign for the future organization of such sporting events in Slovenia.



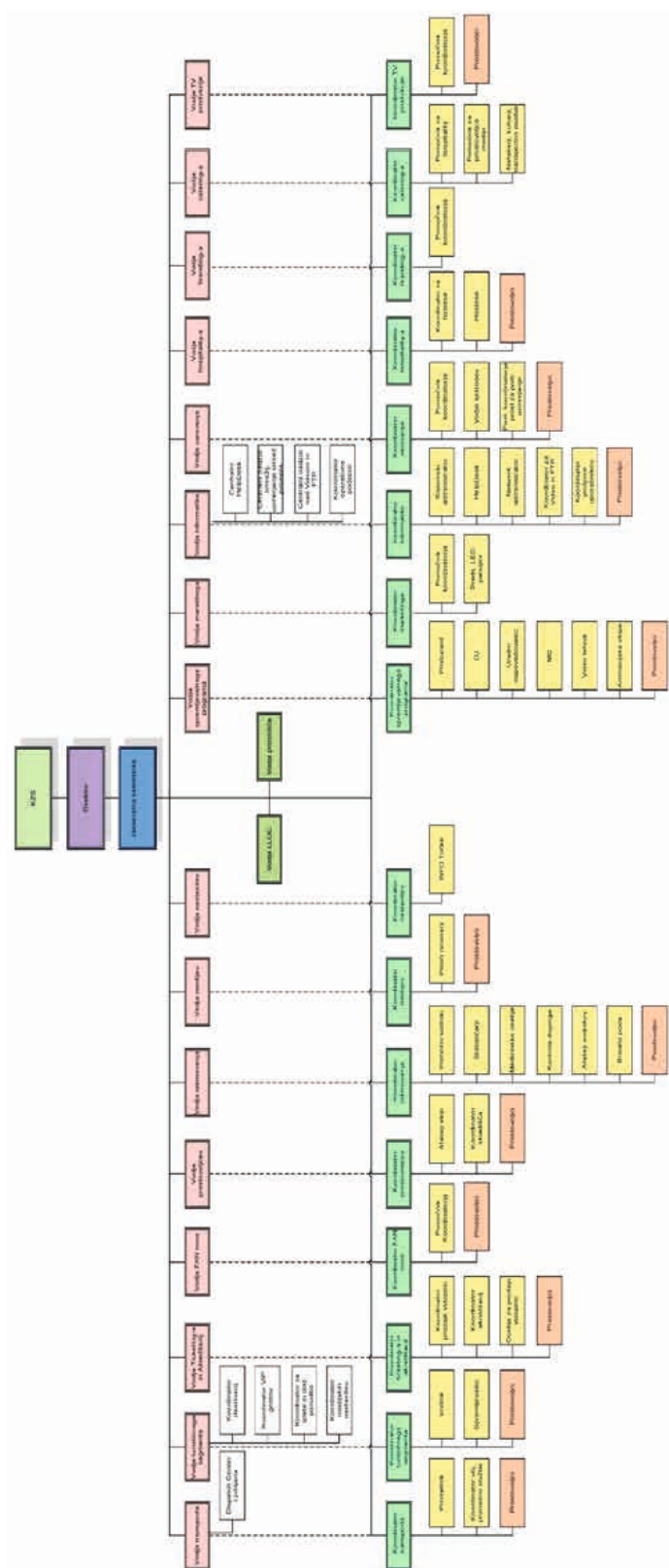


The Basketball Federation of Slovenia (hereinafter BFS), which was the organizer of the EuroBasket 2013, undertook the implementation by founding the company EP 2013, d. o. o., taking care exclusively of the European Championship. The company had its premises and its organizational team. It was organizationally, operationally, in ways of banking and transactions, contractually and legally-formally entirely separate from BFS, which was the 100% owner of the company. The project was therefore set up as a completely project organization. The organizational structure also involved partner companies. The organizer solved the issues by signing a partnership agreement with certain companies, allocating areas in which the companies operated. Figure 3 shows the shape of the organizational structure of the project EuroBasket 2013.

Such organizational structure was flexible, as it welcomed new members of the project team at different stages in the life cycle of the project. It had to be highly formalized, as the newly incorporated members understood their position in the organizational structure (their responsibility and role), learned about the operational processes, communications and other processes. Thus, various policies, job descriptions, the Matrix of communications and operational and financial plans were designed for each included area. These were the guidance of each leader, during work in their field. It allowed a degree of flexibility of employees who could, at their discretion, operate with the budget and activities within their field. Centralization was reflected in the fact that any decision needed to be approved by the director, who also had to approve the payment of any invoice. This was very important, so as to ensure control over the tracking of plans and there was no loss of funds. The management of individual areas was adopted by external organization which performed their business activities. This has removed one branch of communication and there also were no cost of salaries for these people, because the partner companies charged a service rendered, which was defined in the contract. This was an innovative move, which could become a common practice in the organization of similar projects, it is only necessary to draw attention to the problem of sharing responsibility.



Figure 3: Organizational structure of the project EuroBasket 2013



Source: (EP 2013, d.o.o., 2013).



Established organizational structure of the project EuroBasket 2013 did not follow the practice in the level of differentiation. Organization of complex projects of sporting events are obliged to be flattened in the degree of differentiation, so that processes and communication take place as quickly as possible. There was perhaps one too many hierarchical levels, namely the level of the coordinators of individual areas. In this, the organizational structure of the project EuroBasket 2013 also deviates from our proposed organizational structure in Figure 2. The operational and financial plan of each area was presented to the Head of the field. He in turn supplemented the plans and pointed out the activities within the financial plan. The weakness is in the fact that he needed to implement his ideas and plans through another intermediary (the coordinator) before reaching the task team. This creates the risk that some information is lost or communication transmitted in a way that changes its meaning. The head of the field has no direct control over the executive level, which also slows down the decision-making processes. The organizational structure is somewhat over-extended horizontally also. 16 areas were identified, which in our view can be reduced to at least 13. Thus, we could combine marketing and branding; hospitality and catering as well as the media and TV production. The separation between the units would therefore be somewhat smaller, which would facilitate the overall coordination and management of the project. In view of the established functions and forms of organization, the established organizational structure of the project EuroBasket 2013 corresponds to the organizational structure that we propose for complex projects of sporting events. In both cases, we are talking about completely project-based organization that exists for the duration of the project and operates separately from its parent organizations.

## CONCLUSIONS

In the article, we discussed about sports competitions in the light of projects. In doing so, we put forward the concept of complexity, and looking for the best organizational structure for managing such projects. We found many links between major sporting competitions and complex projects.

Complex projects are long-term, risk, require substantial financial resources and the engagement of a large number of individuals and organizations. Complex projects in the field of major sports events are characterized by the mutual interconnection and interdependence of the activities involved, the different interests of the involved organizations, sponsors and individuals, various funding sources and different ratios between participants, both in internal systems, as well as with the external environment. The complexity of large sports events further increases large media attention, the inflow of funds at various times and fluctuations in the number of individuals involved in the various stages of preparing and implementing these projects. It is therefore necessary for managing such projects to integrate specific knowledge and experience in the field of sports and the sports events with the methods and techniques of project management.

For the implementation of complex sports events projects, we need an appropriate project organization. It needs to be flexible in order to adapt to sudden changes and to accept people at different stages during the project. It should be formalized, meaning that jobs, processes and other rules are clearly described. In cases when important decisions must be made it should be centralized, but during the peak of the events implementation, it needs to be decentralized. It must also be flattened, as in such case, communication channels are short and thus the faster the flow of information is possible. For complex projects of sports events, a pure project organization is therefore the best suite. While it is a temporary organization established for the duration of the project, it might be part of the existing organization, with which it works in harmony, or it might be a separate and independent of the parent organization. It can also include components of other organizations or even have its own legal form.

Pure project organization was also established in the case of a project EuroBasket 2013. Exclusively for the project a new organization with its legal form was set up – a company called EP 2013 Ltd., which had full responsibility for the implementation of this project. The newly established organization operated entirely separate and independent from the founder. The new organization has had its business premises, its leader (director) and its employees. The director had full jurisdiction on the project, for which he developed its organizational team. Members of the team were also from partner organizations, which taken over certain project areas. Such an organization enabled easy communication, coordination and control over the course of the project. After completion of the project, the organizational team was disbanded; all the contracts were completed and finally, the company EP 2013 Ltd. was liquidated in year 2013.

The issue being discussed has not received sufficient attention in the Slovenian research or professional area, especially if this is concluded on the basis of the outstanding achievements of Slovenian athletes at major international competitions. Sport, and everything in conjunction with sport is certainly an area that may present significant business opportunities, not just for a single organization, but also for the wider regions and even the countries. The achievements of Slovenian athletes testify that it is appropriate to exploit this field in Slovenia much more also for business purposes.

The project EuroBasket 2013 has proved to be an excellent prospect for organizing more such events in the future. It was finished with a profit of half a million euros for the organizers while sponsors, the state budget and the municipalities got back much more than they invest in the project as a financial input. EuroBasket 2013 project attracted in Slovenia new tourists, increases income for caterers, hotels, etc. The legacy of the project is also reflected in the newly refurbished sports halls that are now suitable to host more sports events, as well as in increased interest of especially younger population for sport. Due to these benefits, the government of the Republic of Slovenia should integrate the organization of major sports events in their development plans. At this point we would advise further research in the field of organization of large sports competitions, with an emphasis on sustainable development, and explore the impact on the economic development of the country.



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# Beta and Sigma Convergence within the European Union Countries and Regions

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## *ABSTRACT*

One of the principal aim of European Union is development's disproportion reduction between member states and their regions. Real convergence is one of the pillars of the integration process. It is also the primary objective of the EU structural policy. The paper focuses on analysis and evaluation of the beta and sigma convergence within European Union countries and regions. The scrutiny considers 28 EU countries (years: 2000 – 2013) and 276 regions (years: 2000 – 2011) on the NUTS<sub>2</sub> level (Nomenclature of Territorial Units for Statistics). The aim of the article is to verify the hypothesis that among the European countries and regions the convergence process occurs. The next focus is given on the crisis impact on real convergence in EU. The analysis confirms convergence process on national and regional level. The study clearly shows that in the case of countries the process is faster and more clear to define than in case of the regions. However, both the countries and regions on the lower level of growth exhibited its greater dynamics in the studied period.

*Key words: European Union, beta and sigma convergence, economic growth and development.*

## INTRODUCTION

Convergence understood as a process of “approaching” or “assimilation” of different areas of functioning of the countries and regions has a special place in the process of European integration. This category, however, may have multiple meanings. In a larger sense, we can talk about the convergence of the system associated with the process of unification of economic systems, as evidenced by: deregulation, liberalization, increasing globalization (Swadźba, 2006, p. 37). In a narrower sense, we deal with the convergence of the sphere of regulation, which refers to the legal rules and social norms binding business processes (Woźniak, 1993, p.16), or the nominal and real convergence. Taking into account the area of the European Union, particular importance have the last two dimensions of convergence: nominal and real. Introduced in the Maastricht Treaty indicators and rules conditionings the opportunity of the country to join the Economic and Monetary Union are called nominal convergence criteria, and therefore it is a term that refers to the convergence of macroeconomic variables that characterize the monetary policy of the state. Convergence of the real sector is understood as a process of eliminating disparities in development between Member States and European regions. With real convergence we have to do when the regions and countries of the EU at a lower level of development are “catching up” with richer countries and regions, otherwise there is a process of divergence. Therefore, we can define it as the process of equalization of income levels (Próchniak, 2006, p. 75 - 87). Thus understood idea of convergence results from the idea of the integration process, which is why it was reflected in the first founding documents of the Community, as the main objective of its functioning. The first records of the harmonious development, reducing development disparities between regions and supporting backward regions are derived from the preamble to the Treaty of Rome (EEC Treaty, 1957, p. 2). These records were duplicated in each EU treaty as one of the most important activities of the Community and the basic objectives of EU policy, which is the cohesion policy.

Therefore, the subject of this article is the analysis of the process of real convergence in the European Union. The aim of the elaboration is to investigate whether in the EU area there is a convergence or divergence, taking into account both the regional as well as national dimension. Analysis of these two dimensions is dictated by a number of premises. Firstly, the assumption of gradual assimilation of the Member States in all socio-economic spheres results from the very idea of integration. Secondly, cohesion policy, which main objective is the elimination of disparities in the EU countries, is one of the most important EU policies. Therefore, the assessment of the convergence of the economies of the EU is in a sense an attempt to present the impact of the integration processes on the convergence, and assessment of the effectiveness of EU cohesion policy. This is particularly important for Poland, which is currently the biggest beneficiary of the resources received from the European funds. Thirdly, in the literature of the subject there is quite a large difference of opinions on the convergence of countries and regions. One often points to the issue of regional polarization, and convergence analysis only on the national level is often regarded as a kind of generalization. Secondly, taking into account the regional dimension of NUTS2 level according to the European statistical classification is justified by the fact that these regions are precisely the benchmark in the allocation of EU resources within the cohesion policy. The NUTS2 level regions are taken into account in the criteria of determining the amount of the allocation of the EU resources. Those that are the poorest get the most, and therefore the regional analysis will indirectly allow to assess the effectiveness of the EU structural policy. For the convergence analysis one used the sigma and beta model of convergence, which examines the degree of convergence of GDP per capita. The GDP indicator is highly controversial, especially to assess developments (Stiglitz, Sen, Fitoussi, 2009, p. 23 - 58). However, it should be noted that the indicator is still a basic criterion for allocation of resources under European funds, as well as evaluation of economic cohesion in the European Union. One adopted for the analysis the period of the years 2000 - 2013 in the case of the analysis of convergence at the level of states, and 2000 - 2011 for the regions of the EU. The period included in the study is determined by the availability of data, this concerns mainly the data for the regions, which are available only to 2011. Despite this, the time perspective allows to show the extent to which the economic crisis has affected the process of convergence in the EU, which also is the purpose of this Article.





## LITERATURE REVIEW

In the literature there are many studies on convergence, including real convergence. Despite this, it is a subject still valid and demanding exploration, especially in times of ongoing nowadays very important geopolitical and economic changes. Past studies with a review of research on convergence were presented by De la Fuente (1997), Barro and Sala - and - Martin (2003), Islam (2003), Siwiński (2005) or Próchniak (2006). The first empirical studies on the convergence began to appear in the 80s of the twentieth century, which is undoubtedly associated with expansions of endogenous growth theories. However, because of the breadth of topics, in this elaboration the literature review will be narrowed down to the beta and sigma convergence. One also decided to limit the subject, focusing only on the European Union. It should be noted that the countries of the European Union, especially the EU15 were a component of a broader study of convergence, which included in addition to the EU countries other countries of the world. Such studies were conducted among others by: Mankiw, Romer, Weil (1992), Ben – David (1993), Islam (1995), Smolny (2000), Barro, Sala - and - Martin (2003), De la Fuente (2003), Di Liberto, Symons (2003), Milanowic (2003). These authors, in most cases, confirmed the presence of the convergence process among the surveyed countries. The conformity of conclusion concerned primarily conditional convergence as shown by Mankiw, Romer, Weil (1992, p. 407 - 437), Islam (1995, p. 1127 - 1170), Smolny (2000, p. 589 - 606). Lack of convergence in the analyzed area was shown by Barro, Sala - and - Martin (2003, p. 479 - 496) and Mankiw, Romer, Weil (1992, p. 407 - 437) and was related to the absolute beta convergence. On the other hand, Ben – David (1993, 653 - 679), and Mello, Perrelli (2003, p. 643 - 667) pointed out the lack of sigma convergence in the studied countries.

In the studies on convergence in the European Union member states, the European Commission also has a position. In its studies it indicated that there is a gradual leveling of socio-economic differences in Member States and EU regions. This is shown inter alia in the so-called Cohesion Reports (2007, p. 3 – 90, 2010, p. 7 - 40). Neven, Gouyette (1995, p. 47 - 65), Fagerberg, Verspagen (1996, p. 431 - 448) and Magrini (1999, p. 257-281) showed that in the 80s and in the early 90s of the twentieth century gradually occurred the process of convergence in the EU countries, and on regional level, the differences in income increased, which indicates the presence of divergence. Gianetti (2002, p. 539 - 567) studied the sigma convergence of EU countries and regions in the years 1980 to 1992 and he confirmed that this process occurs in a national dimension and can also occur in a region. A key factor determining the growth and convergence of regions is the knowledge and the effect of its “spill-over”. According to Gianetti, the state convergence can occur with simultaneous differentiation of regions development. Determinants of convergence of regions can be specialization. The integration and greater knowledge exchange occurs between regions with similar specialization, and it primarily applies to regions specializing in high tech sectors. Regions specializing in traditional sectors remain on lower level of development (Gianetti, 2002, p. 539 - 567). Kaitila (2004, p. 2 - 28), Verblane, Vahter (2005, p. 8 - 42) and Matkowski, Próchniak (2006, p. 73 - 88) studied the convergence of the countries of Central - Eastern Europe, which currently are members of the EU. The conclusions of the studies of the above mentioned authors confirm the presence of absolute and conditional beta convergence. Matkowski, Próchniak (2009, p. 3 - 41) also studied the process of equalizing the income levels in a group of 10 countries of Central- Eastern Europe, which joined the EU after 2004, as compared to the “old” EU member states. The analysis covered the period from 1993 to 2008, but calculations have also been made for subperiods: 1993 - 2000, 2000 - 2008. The results of the analysis indicate that the analyzed countries, including Poland, are close to the EU15 in terms of growth. In the period 1993-2008, the income difference between the “new” and “old” EU member states has decreased. The authors also pointed out that the tendency to reduction of differences in income levels was clearly revealed in the second part of the period. Moreover, one also confirmed the presence of income convergence between countries of Central - Eastern Europe, both in the light of the beta and sigma coefficient. The process of leveling of income differences within this group of countries is, however, slow (Matkowski, Próchniak, 2009, p. 3 - 41). A similar scope of subject was adopted in the study by Verblane and Vahter (2005, p. 8 - 42). According to the authors, the process of catching up with the EU15 countries by the CEE10 countries is progressing relatively quickly. In particular, the rapid pace of this process occurs between the period 1995 - 2005 in the Baltic States: Estonia, Lithuania, Latvia. For all the CEE countries, high dynamics of convergence to EU countries occurred in the years 2001 - 2004, which undoubtedly is related to the process of accession of these countries to the European Union. In the publication one also



made a comparison of the degree of convergence of the CEE countries to the EU<sub>15</sub> and the so-called cohesion countries: Ireland, Portugal, Spain and Greece, at a time when these countries joined the EU structures. The results indicate that in these countries the convergence process occurred more slowly than in the CEE countries (Verblane, Vahter, 2005, p. 8 - 42).

Despite of many works confirming a process of gradual convergence in the European Union countries, recently more and more attention is paid to the divergent trends in the European Union (Alexe 2012, Głodowska 2012, Cuestas, Monfort, Ordones, 2012). This is a reference both to countries at different levels of development and with different economic structures, as well as on regional level. Alexe (2012, p. 1 - 7) examined the impact of the global crisis on the convergence of the EU countries, with particular emphasis on the countries that have become members of the Community after 2004. The adopted time perspective in the study were the years 2000 - 2010. According to the author, the states which joined the EU in 2004 approach in terms of GDP per capita growth the other countries of Western Europe, and in the case of Bulgaria and Romania, the process is not so clear. The relatively low level of convergence is also characterized by the Polish economy. The crisis of the years 2008 - 2009 has contributed to the negative trends in the leveling of differences in development between the EU countries, but it had varying effects on different economies. As an exception one indicated Poland, where despite the crisis, one reported growth, so it can be concluded that in the case of this economy crisis has not slowed down the process of catching up with the richer countries. A similar situation was recorded in Slovakia (Alexe, 2012, p. 1 - 7). Głodowska (2012, p. 174 - 183) in the analysis of convergence on the level of countries and regions draw different conclusions. According to the study, in the years 2001 - 2010 state income convergence occurs, and in the years 2001 - 2008 there is a divergence in regional level. Cuestas, Monfort, Ordones (2012, p. 5- 20) shows the presence of the club convergence. One analyzed the EU countries except Malta, Cyprus and Luxembourg. Adopted study period were the years 1980 - 2009 for the countries of Western Europe and the years 1990 - 2009 for Eastern Europe. Finally, the authors point to a very large income differences between the analyzed economies, as well as progressive divergence. The survey results indicate that the clubs of countries are formed. Countries of Central and Eastern Europe and Greece are a group of states in the area of which we can talk about the club convergence. Greece is therefore classified more as a transforming country. In the case of other clubs, it is hard to look for a key in their grouping as belonging to the euro area or division to the north and south of Europe. As a second group of countries one mentions: Finland, Ireland, Italy, Portugal, Spain and Sweden. The third group of countries are: Austria, Belgium, Denmark, France, Germany, the Netherlands and the United Kingdom (Cuestas, Monfort, Ordones, 2012, p. 5 - 20). One of the more recent research on the convergence of the European Union countries was conducted by Dvorokova (2014, p. 88 - 93). The elaboration concerns the 28 EU countries and the period of 2001 - 2012. The aim of the analysis is to confront the model of beta convergence and sigma convergence, as well as examining the impact of the economic crisis on the convergence process as an exogenous factor. The author confirms the presence of beta convergence, which indicates that countries with low GDP per capita in the initial period of analysis are characterized by the highest growth dynamics. These are countries such as Romania, Bulgaria, Lithuania and Latvia. Opposite phenomenon occurs in the case of Ireland, the Netherlands, Italy, France and Belgium. Conclusions from the analysis of sigma convergence are not so clear. In the period before the crisis, differences in growth between the studied economies has increased. This trend intensified in the early years of the crisis, then in the years 2010 - 2011 there was a small decrease in the standard deviation measurement and stabilization in the next years, which may indicate a very slow process of converging of the surveyed countries. On this basis, it is difficult to draw firm conclusions, as the crisis variably affected the individual EU countries. Undoubtedly it had a negative impact on economic growth of the Member States, and thus the process of being conformed. However, there are situations that despite these negative trends, certain economies at a lower level are "catching up" with richer countries, for example Slovakia (Dvorokova, 2014, p. 88 - 93).

In conclusion, the research conducted so far on convergence among European Union countries do not provide a clear answer to the question of the degree of convergence of the economies and regions of the EU. The diversity of the results of previous studies may be due to limitations of the research method used even within the same type of convergence, i.e. sigma and beta, the analyzed period and the number of countries covered by the analysis. Most studies is of selective character when it comes to the choice of the convergence test methods and selected EU countries (these are either the EU<sub>15</sub> or EU<sub>10</sub>), moreover, there is a lack of studies that would simultaneously examine the convergence of countries and regions. Therefore, it seems justified to update research on



convergence of EU countries and regions, especially that in the era of very large external changes and problems within the Union, it may be a key factor in determining the progress of integration both in terms of its deepening and the geographical enlarging.

## RESEARCH METHODOLOGY

Preliminary study of changes in GDP per capita in the EU countries and regions will be carried out using descriptive characteristics. Using box and whisker plot one will present a summary of the data set and draw basic conclusions and generalizations about the set of countries and regions surveyed. Using this plot one will be able to determine the measurements of location, differentiation and asymmetry. The box and whisker plot is composed of a rectangle and two whiskers. Each side of the box and its whisker has its own interpretation. The sides of the box define the quartiles. The first quartile defines the lower side of the box, the third quartile is the upper side. The width of the box is not important and does not play any informational role. Bottom side of the box is connected with a straight line with a minimum value of GDP per capita, creating a lower whisker and vice versa. The upper side of the box is combined with the maximum value to form the upper whisker. Inside the box with a square one marked the position of the median. Box and whisker plot analysis provides information on the distribution of the selected features, in this case, GDP per capita among countries and regions of the EU. Differentiation of the GDP per capita can be determined by comparing the length of the four sections defining the ranges of numerical values for the next 25% of the respondents. The first section is the lower whisker and bottom side of the box, the second section is the lower side of the box and the median value (square in the box), the third section is the value of the median and the upper side of the box, and the fourth section is the upper side of the box and the top whisker. The longer the section, the greater the diversity in the given group of 25% units and vice versa. The diversity in 50% of the most common units, centrally situated in the distribution, is determined by the height of the box. The higher it is against the entire plot, the more different between each other the most typical units, and the smaller the variation of characteristics of 50% of border units (25% of the highest values of characteristics and 25% of the minimum values). The asymmetry may be evaluated by the length of whiskers. If the upper whisker is longer than the bottom, the distribution of the feature is characterized by right-sided asymmetry, which means that more of the respondents have lower values of the feature. If lower whisker is longer than the upper, the distribution has a character of left-sided asymmetry. In the case when the length of the whiskers is equal, we are dealing with symmetric distribution (Bielecka, 2011, p. 182 - 184).

For measuring the process of alignment of levels of GDP per capita between countries and regions one used a model of sigma and beta convergence. Beta convergence concerns the relationship between the average growth rate of GDP per capita, and the initial level of the product. It may occur as absolute convergence, when the countries or regions are close to each other, regardless of the initial conditions. In this situation, the less developed countries grow faster than countries with a higher level of development, and an increase in their real GDP per capita is the greater, the lower the level of GDP per capita at the beginning, so there is a leveling of the levels of development in these countries (regions). Beta convergence may also occur as a conditional convergence, which means that countries with similar structural parameters get similar in the scope of GDP per capita levels (Wójcik, 2008, p. 42). Sigma convergence means that the dispersion of product per capita between the studied countries (regions) decreases with time. Both of the above approaches to convergence are linked. Sigma convergence shows the change in the distribution of GDP per capita at the time included in the analysis of countries (regions) and beta convergence informs about the change in the levels of product per capita of individual countries (regions) within a given distribution of products over time (Nowak, 2007, p. 75 - 76).

Therefore, in this part of the paper one analyzed the convergence of beta and sigma type at the level of the European Union Member States and at the level of NUTS2 regions, using the following formula:



1. Sigma convergence (Nowak, 2007, p. 71):

$$\sigma(t) = \sqrt{\frac{1}{n} \sum_{i=1}^n (\log y_i(t) - \bar{y}(t))^2}$$

Where:

$$\bar{y}(t) = \frac{1}{n} \sum_{i=1}^n \log y_i(t)$$

$y_i(t)$  = GDP per capita in "i" – country

Sigma convergence occurs when:

$$\sigma(t) < \sigma(t-1) \text{ or } \sigma(t) \leq \sigma(t-1).$$

2. Beta convergence (Mokrosińska, 2011, p.73) :

$$\frac{1}{t} (\ln y(t) - \ln y(0)) = \alpha_0 + \alpha_1 \ln y(0)$$

Where:

$y(t)$  – GDP per capita at the end of time period

$y(0)$  – GDP per capita at the initial time period

$t$  – numbers of years

Beta convergence occurs when the parameter is negative. The beta ratio is calculated using the following formula:

$$\beta = -\frac{1}{t} \ln(1 + \alpha_1 t)$$

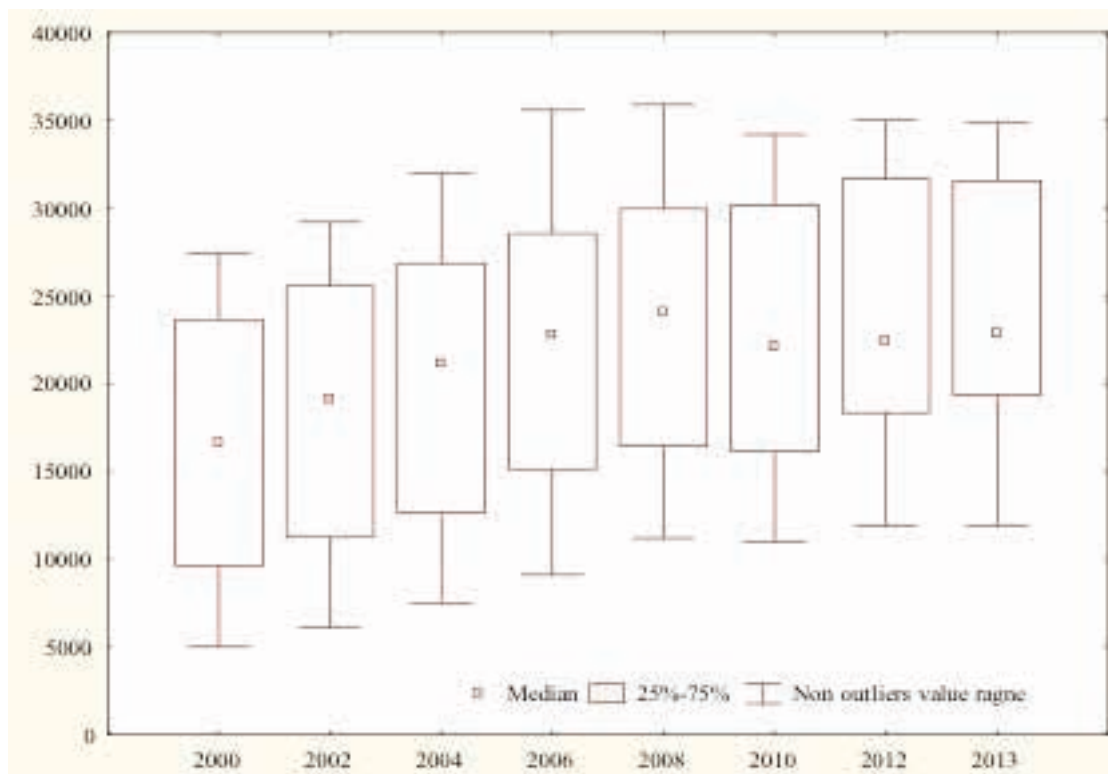
The positive assessment of beta parameter means that poorer countries are developing faster than rich countries. It also informs how quickly occurs the approaching to the long-term equilibrium.



## RESEARCH RESULTS

Presented chart 1 shows the descriptive characteristics of GDP per capita (according to PPS) of European Union countries in selected years from 2000 - 2013. In the analysis one omitted the Luxembourg economy because the value of GDP per capita of the country in the analyzed period on the average was 59 671 PPS, and for all other countries it was 21 418 according to PPS (Eurostat Database). It is therefore a much higher value than average occurring in the Member States, which imposed certain difficulty in the interpretation of the general data for the studied countries. On the box plot the value was treated as outlier variable. In order not to distort the informational values of the remaining variables, Luxembourg was excluded from the analysis of statistical parameters.

*Fig.1:* Box plot presenting the value of GDP per capita (according to PPS) of EU countries in the years 2000 - 2013



Source: own work based on the Eurostat Database.

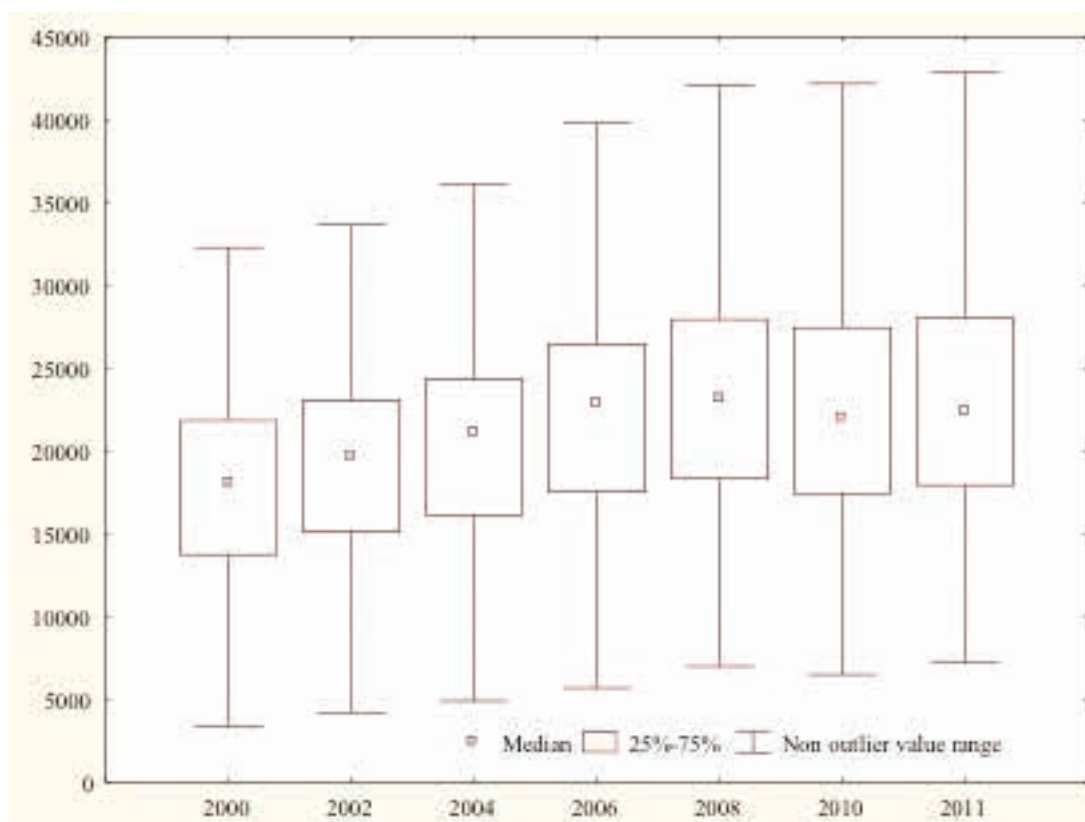
As it results from plot 1, over the studied years, the GDP per capita of countries showed an upward trend. It may be noted that the higher growth rate was observed among the countries with higher GDP per capita, which particularly applies to the period 2004 - 2006. The analyzed area is characterized by a large discrepancy, it also applies to 50% of the central values (height of the box). The spread between the richest and the poorest country in the entire analyzed period is not less than 20 000 (according to PPS). The smallest differences were observed in 2010 and the following years. The plot shows the impact of the economic crisis on the changes of value of GDP per capita in the European countries. Firstly, after 2008 there was a decline in the value of GDP per capita in almost all Member States, while the greater dynamics of decrease is visible among the richer countries. The median value also decreased very clearly as a result of the crisis. Back in 2008, the median of GDP per capita in EU countries amounted to less than 25 000 according to PPS, which meant that EU countries have GDP per capita below the median, while for the second half of the countries, this value is higher. In 2010, the median value was already 22 000 according to PPS, which means



deterioration in ½ of the EU countries. The asymmetry of the distribution can be assessed as very moderate, left-sided. After 2010, this asymmetry increases. This means that most of the surveyed countries have a value higher than the average.

Plot 2 shows the result of the value of GDP per capita in EU regions. Initially, the study included all NUTS 2 level regions (276 regions). Later in the study, due to the very high value of GDP per capita following regions were excluded from the plot: Luxembourg, Region de Bruxelles-Capitale, Hamburg, Ile de France, Vienna, Stockholm, Inner London. Reasons for exclusion are the same as in the case of Luxembourg on Plot 1. Presented period are selected years from the time period from 2000 to 2011.

*Fig.2:* **Box plot presenting the value of GDP per capita (according to PPS) of EU regions NUTS2 in the years 2000 – 2011**



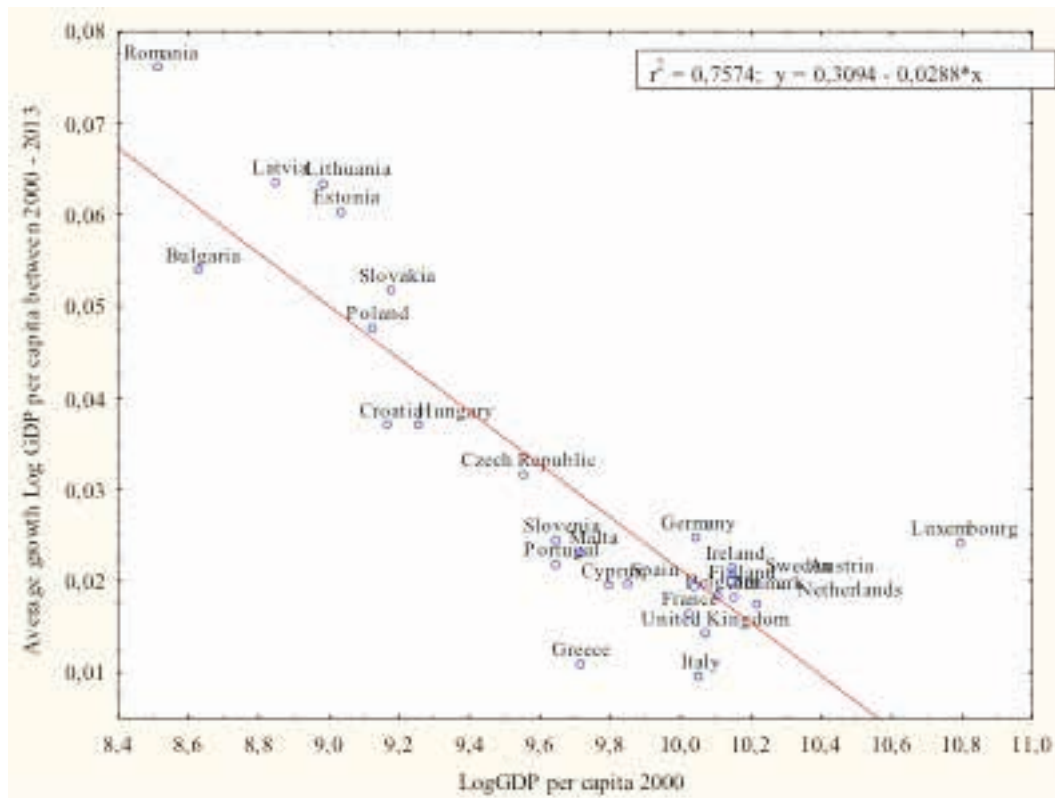
Source: own work based on the Eurostat Database.

The discrepancy in the level of GDP per capita among EU regions is much higher than in the cross-section of countries. Even after the elimination of regions with extremely high values or standing out, the gap between the richest and the poorest region amounted to 25 000 (according to PPS) in the first year of analysis and 35 000 according to PPS in the last year of analysis. By 2008, one can note a steady increase in the level of GDP per capita, while higher dynamics of growth was characteristic for the richer regions. Moreover, in this group of regions one have not seen the negative effects of the economic crisis. It is true that after 2008 there was a kind of stopping of the upward trend, although in the case of the highest value in the plot it was merely a stabilization in 2010, and in 2011 there was a re-growth of GDP per capita. For the other regions one can observe a minimal decline in the value of GDP per capita. It concerns the regions with the lowest value of this indicator, the median value and the value of 50% of the central regions also decreased. These are regions where GDP per capita was higher than 17 000 according to PPS but not greater than 27 000 according to PPS. The length of the whiskers indicates large differences in 25% of the regions with the lowest GDP per capita values. The same trend was found among 25% of the regions with the highest values of this measure.

Relatively smallest variation occurs in the central section. From the distribution of the data one cannot see a clear asymmetry, it should therefore be considered as a fairly symmetric set.

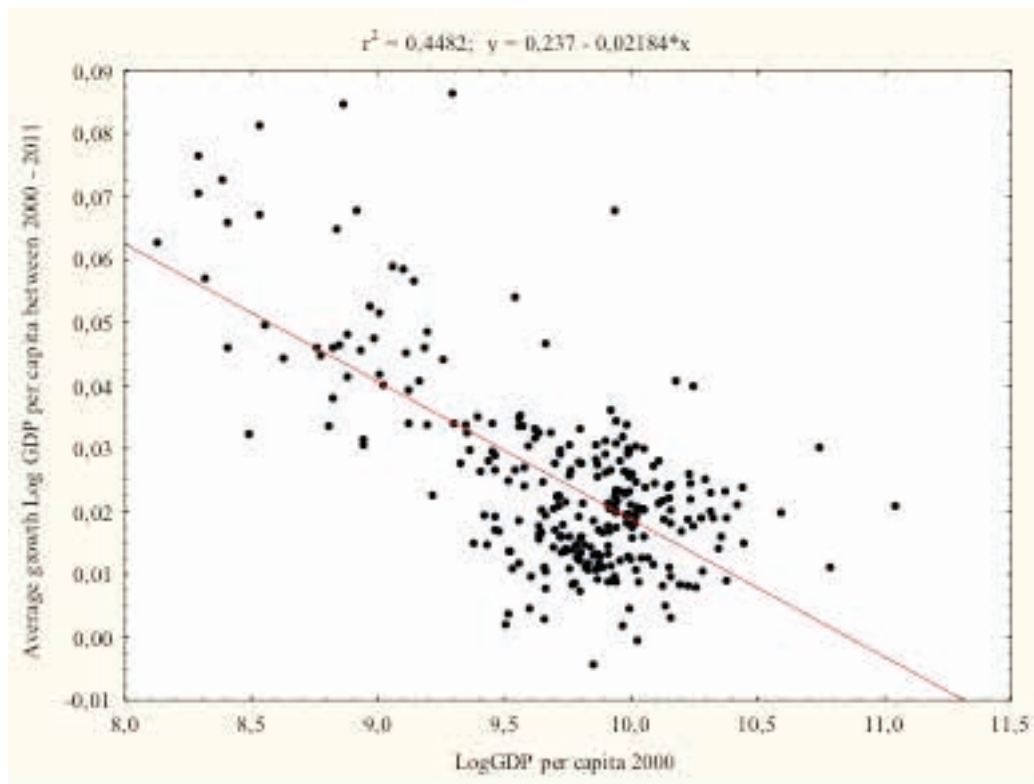
Plot 3 and 4 show the results of the analysis of beta convergence in EU countries and regions. Table 1 summarizes the results of the regression of beta convergence.

*Fig. 3: Beta convergence within EU countries*



Source: own work based on the Eurostat Database.



Fig. 4: Beta convergence within EU regions (NUTS<sub>2</sub>)

Source: own work based on the Eurostat Database.

Tab. 1: The results of the regression of beta convergence within EU countries and regions

The results of the regression of beta convergence within EU countries in years 2000 – 2013			
$\alpha_0$	$\alpha_1$	$R^2$	$\beta$
0,3094	-0,0288	0,7574	0,0369
The results of the regression of beta convergence within EU regions in years 2000 – 2011 (NUTS 2 - 276 regions)			
$\alpha_0$	$\alpha_1$	$R^2$	$\beta$
0,2371	-0,0218	0,4482	0,0253

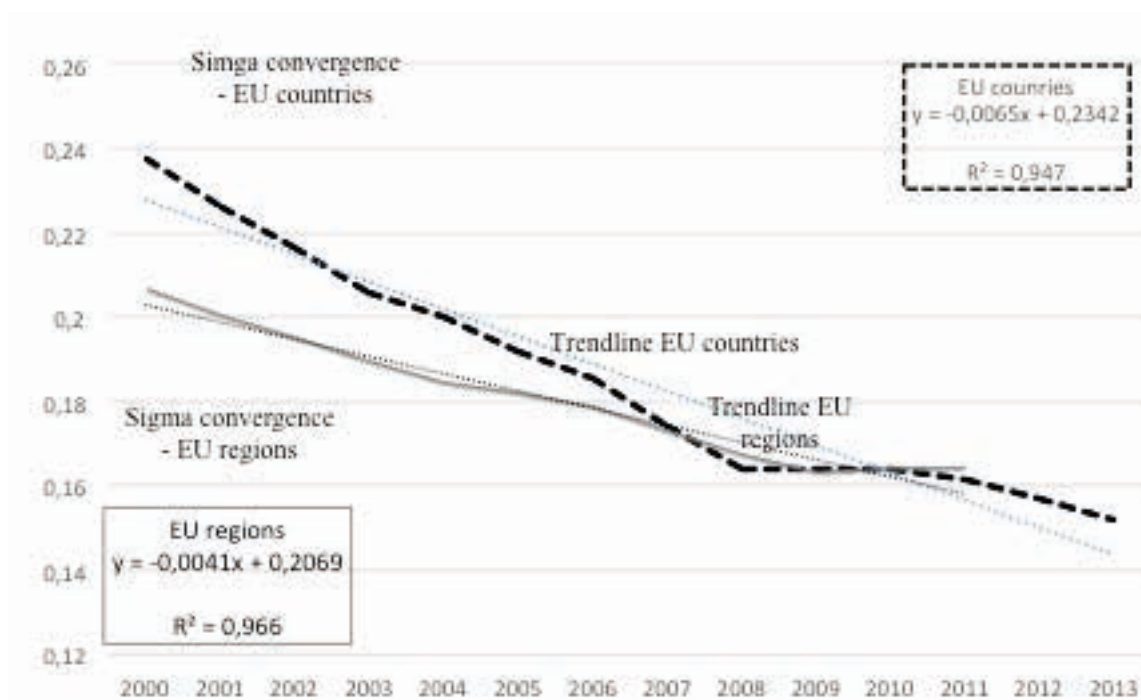
Source: own work based on the Eurostat Database.

As can be seen from Plot 3 and 4 and Table 1, countries and regions of the European Union in the years 2000/2013 and 2000/2011 developed in accordance with the hypothesis of beta convergence. The negative and statistically significant value of the  $\alpha_1$  estimator confirms the presence of beta convergence. Countries and regions that at the beginning of the analyzed period were characterized by a lower level of GDP per capita, in the next few years included in the study achieved an average economic growth rate faster than regions and countries with higher levels of GDP per capita in 2000. The slope of the regression line is negative and steep for both - regions and countries. The coefficient of determination in the analysis of countries is set to 0.7574. It means that the coefficient is statistically significant and indicates the adjustment of the regression line to the empirical data. In case of regions, the value of 0.4482 is quite low and shows that the regression line moderately approximates the real data points. Beta convergence is

shown also by the  $\beta$  coefficient. Its positive value for the countries and regions confirms the convergence process. The calculated  $\beta$  coefficient reaches a different value for the countries and regions. In the case of countries it has the value of 0.0369, which allows to assume that the annual rate of converging of the countries in the analyzed period to the long-term equilibrium is 3.7%. For the regions, this coefficient is lower and amounts to 0.0253, and therefore the regions convergence process within a year is 2.5%. In summary it can be stated that the study of the regions should be treated with caution due to the low coefficient of determination, as well as taking into account the informational value of descriptive parameters, which are shown in the box plot.

Plot 5 shows the result of the analysis of sigma convergence for both EU countries and regions.

Fig. 5: Sigma convergence within EU countries and regions



Source: own work based on the Eurostat Database.

Based on the plot 5 it should be noted that in both the countries and regions in the European Union there is a process of convergence in accordance with the sigma model. It should be added that in the case of the countries, this process is more clear, especially in the years 2000 - 2008. Similarity of the regions is also more evident by the year 2008, but based on the slope of the trend line it can be stated that the process is slower than in the case of countries. In the years 2008 - 2011 one can see the stopping of the sigma convergence for both the countries and regions. Undoubtedly, one must associate it with the economic crisis. Therefore, it can be stated that the crisis had a negative impact on the convergence process of the EU economies. In the case of countries, from 2011, one has observed again a negative slope of the trend line, indicating further proceeding towards the unification of the EU area. In both cases, the coefficient of determination reaches a high value above 90%.

## CONCLUSIONS

Economic convergence is one of the pillars of the integration process. It is also the primary objective of the EU structural policy. Since the reform of the Structural Funds in the late eighties, through successive financial perspective, one has articulated the priority concerning the reduction of disparities in development between countries and regions in the EU. Empirical studies, however, did not provide conclusive evidence of whether this convergence actually occurs. Analysis carried out in the article on sigma and beta convergence in the years 2000 - 2011 for the NUTS 2 regions of the EU and from 2000 to 2013 for the EU countries enables to confirm that there is a process of convergence at both the regional and national level. The study clearly shows that in the case of countries the process is faster and more clear to define than in case of the regions. However, both the countries and regions on the lower level of growth exhibited its greater dynamics in the studied period, which is consistent with the hypothesis of beta convergence. As it results from the conducted study, it contributes to the elimination of disparities in terms of sigma convergence in the analyzed period. It can be assessed that in countries and regions of the EU there is an increase of the convergent. It should be added that convergence is a multidimensional process. One must therefore be constantly updating this type of research, as well as increase its spectrum. Long-term equilibrium state pursued by the countries (regions) in the long period, in accordance with the hypothesis of absolute convergence, depends on the level of technology, the rate of growth of population, government policies, market structure, factors of production, etc. Therefore, the inclusion of these factors in the study would give more detailed information.



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# Stakeholder Satisfaction as the Key Determinant of Quality System's Improvement in Polish Universities of Technology

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## *ABSTRACT*

The following article analyses the role of stakeholders in selected methods of assessing the quality of educational services of universities and discusses quality management systems according to Common Assessment Framework for education. Furthermore, it presents the example of method of stakeholder satisfaction measurement called Stakeholders Satisfaction Index (SSI) which is an original proposal of an aggregate measure of satisfaction perceived by stakeholders. The article also contains an analysis of the possibilities of implementing the SSI index in various areas and methods of improving quality management systems (QMS) of higher education institutions.

*Keywords: stakeholders satisfaction, quality management system, higher education*



## INTRODUCTION

Continuous improvement of higher education services is a very important need in relation to the rapidly changing environment of academic institutions. Furthermore, their specific is the presence of a few various groups of entities that are dependent on the quality level of higher education services (stakeholders). For an efficient quality management there is a need to implementing the methods of measuring the quality level. To ensure that this will support improvement processes properly it is important to take into consideration the needs of the at least main stakeholders.

The aim of this article is to present the role of various groups of stakeholders in a quality management system (QMS) of Polish universities and methods of improvement of such systems. Consequently authors propose an index allowing the measurement of the perceived satisfaction level of higher education institutions stakeholders groups. Due to a specific of quality focused re-orientation within Polish higher education, besides presenting solutions and suggestions from foreign literature, researches and suggestions of Polish authors dealing with this subject has been used.

## HIGHER EDUCATION SERVICE QUALITY MEASUREMENT – MAIN CIRCUMSTANCES

Educational services are a special type of services as they are always some kind of an experience for the recipient, but, as one can imagine, even if a producer's activity is limited, the recipient still gains knowledge and experience. There are specific methods of services' quality measurement that differs from goods quality measures. In case of goods, it is possible to define physical features and the degree of influencing the quality level. But the quality of services is more frequently assessed from the customers' point of view, who defines their level of satisfaction. Thus it can be said that clients assess the "perceived quality of service" (Gronroos, 1984) by comparing their expectations with the subjective experience of service (perceived service).

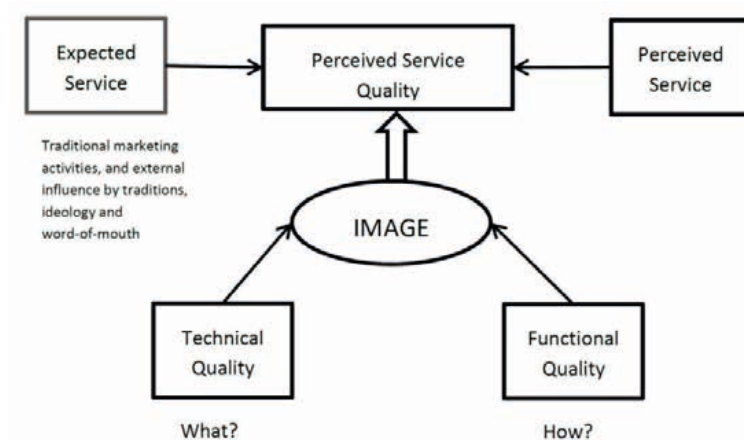


Figure 1: Perceived Service Quality Model

Source: (Gronroos, 1984)





The service quality model presented above (Figure 1) shows a concept in which the perception of service quality is influenced by its image, which is built upon technical and functional qualities. The functional quality is “how [consumer] gets the technical outcome. This is important to him and to his (...) views of service (...) received” (Seth, Deshmukh & Vrat, 2004) while technical quality “is the quality of what consumer actually receives as a result of his/her interaction with the service firm and is important to him/her and to his/her evaluation of the quality of service” (Seth, Deshmukh & Vrat, 2004). There are also some relations between the perceived service quality and the level of client’s satisfaction, which are discussed by, e. g., Iacobucci, Ostrom & Grayson (1995) and Spreng & MacKoy (1996). In general, service quality level influences customer’s satisfaction level. But these two parameters are influenced by the level of what is delivered to the customer, namely the outcome of the process of service providing. Other important factors are: for the perceived quality level – needs, and for the satisfaction level – expectations (Spreng & MacKoy, 1996, p. 209).

Education services’ distinguishing, among other services, characteristic is that the aim of the service process is gaining new abilities and knowledge by the customer. It is also a very diverse group of services with various expectations regarding the effects of the service process which often depend on the different stages of human development. An important challenge for quality assessment of service is that every interested party may have different expectations regarding both the methods and ways of providing the service, as well as its effects. Moreover, among many kinds of educational services, there are differences connected with the level of integrity of customer and investor roles and entities interested in a high quality level of learning effects.

Educational services offered by higher education institutions deserve special attention. Their characteristic is that they usually constitute a stage before starting a professional career. The work of higher education institutions results in gaining knowledge and skills at the highest level (Czarnik & Turek, 2014, p. 31). The services of universities (especially public ones) are also characterized by the fact that the group of parties interested in their high quality is numerous and consists of not only recipients of services and the representatives of authorities (sponsors) but also lecturers and other employees of the institution, who might benefit from the development resulting from students’ skills, knowledge and work. Furthermore important is the role of employers, who will benefit in the future from knowledge and skills of present students. Also, despite studies being free of charge, students’ parents or guardians often participate in the costs of higher education. Therefore, it is possible to analyse the effects of higher education services through a stakeholders’ survey.

With regard to quality of university services it can be said that in the case of higher education the “perceived quality is a consequence of satisfaction” (Athiyaman, 1997, p. 538). The characteristic of higher education is, on the other hand, the presence of more than one receiver of effects of the service providing process who are, directly or indirectly, all stakeholders.

## STAKEHOLDERS AND THEIR ROLE IN QUALITY MANAGEMENT SYSTEMS OF HIGHER EDUCATION INSTITUTIONS

One of the effects of a new pro-client approach that has become popular in Poland after 1989 was a popular equalization of a student and a client role. But in the case of higher education institutions this seems to be inadequate (Pawlikowski, 2008). Therefore, for universities we distinguish defined groups of stakeholders that might influence and/or are under the influence of universities services (Zieliński & Lewandowski, 2012). The concept of stakeholders is very common in the area of corporate social responsibility where a disinterested consideration of social interests associated with different interested parties is promoted

(Carroll, 1979). In the field of management sciences a concept of stakeholders management is used that defines, e.g., social issues for a corporation (Clarkson, 1995, p. 103).

Among many typologies of stakeholders, an interesting one has been proposed by Mitchell et. al. It distinguishes eight types of stakeholders' groups on the basis of three main features: *power*, *legitimacy* and *urgency* (Mitchell, Agle & Wood, 1997, p. 853). *Power* means that a party possesses ability to have "or can gain access to coercive, utilitarian, or normative means, to impose its will in the relationship" (Mitchell, Agle & Wood, 1997, p. 865). *Legitimacy* means that a party "is to be found in something <<at risk>> or in property rights, in moral claims, or in some other construct, articulations of (...) <<Who or What Really Counts>>" (Mitchell, Agle & Wood, 1997, p. 866). *Urgency* is dependent on simultaneous existence of two conditions: "(1) when a relationship or claim is of a time-sensitive nature and (2) when that relationship or claim is important or critical to the stakeholder" (Mitchell, Agle & Wood, 1997, p. 867).

Groups of stakeholders defined by Mitchell et. al. are as follows:

1. Dormant stakeholder – possesses: power,
2. Discretionary stakeholder – possesses: legitimacy,
3. Demanding stakeholder – possesses: urgency,
4. Dominant stakeholder – possesses: power and legitimacy,
5. Dependent stakeholder – possesses: legitimacy and urgency,
6. Dangerous stakeholder – possesses: power and urgency,
7. Definite stakeholder – possesses: power, legitimacy and urgency,
8. Non-stakeholder – possesses neither power, nor legitimacy, nor urgency (Mitchell, Agle & Wood, 1997).

The most commonly identified groups of stakeholders for companies are customers, employees, suppliers, owners, and communities (Mitchell, Agle & Wood, 1997, p. 880) while among the stakeholders of higher education institutions there are students, graduates, or their parents or guardians, and research staff, administrative staff, employers and representatives of local and central authorities (see Zieliński & Lewandowski, 2012; Mainardes, Alves & Raposo, 2011; Teay, 2013).

However, it is common that the same person can simultaneously belong to different groups, the impact of each of the stakeholders' groups on a university is different. This may also affect the perception of quality and satisfaction from the institution services.

Students are a group that has a strong daily relationship with a university. Their impact on the university can be substantial. Their needs can often be very urgent, and thanks to their relationships with university, they have a high legitimacy. However, students usually do not have the power to influence the decisions of a university. Graduates are former students. Changing the role can significantly affect the perception of the service quality. Because of the relationship with the university they possess legitimacy, but due to less frequent contacts and lower dependency on the university, their needs become less urgent. Parents or guardians may have slightly different expectations. Despite a strong commitment to their dependents, they may have only a little influence on decisions made by universities. They are, however, an important group because of the possibility of forming an opinion about a university. Teaching and research staff are stakeholders who have the greatest impact on the quality of higher education services. But they also benefit from the activity of a university, e.g. by creating opportunities for scientific development, or conducting research in collaboration with students and graduates. Administrative staff are responsible for the efficient organization of non-didactic processes, they have a large impact on the other stakeholder groups e.g. students, graduates and academics' satisfaction level from



university services. The most diverse group of stakeholders are employers. It may include either graduates, faculty members or the representatives of the students and their parents. They also may not belong to any other stakeholder group.

The representatives of central and local authorities are an especially important group of stakeholders for universities. It is because they define the legal framework for the activities of academic institutions. The influence of this group is particularly strong on public universities, for which representatives of authorities define the principles and assessments criteria affecting the financing of a university.

As the representatives of authorities can also be considered as members of a university assessment bodies such as the Polish Accreditation Commission, whose task is, e.g., checking the compliance of an academic institution activities with the required quality standards.

Polish universities have a fairly wide discretion regarding the implementation of an internal quality assurance system. However, they must meet the basic requirements of such systems, as defined in the statute of Polish Accreditation Commission (Chmielecka, 2013). These requirements largely correspond to the demands presented in the document *Standards and Guidelines for Quality Assurance in Higher Education* (ESG) by European Association for Quality Assurance in Higher Education (ENQA) (Chmielecka, 2013). In these documents were expressed an important role of certain groups of stakeholders such as students, workers, and employers. However, both of these standards lack an explicit reference to the continuous improvement of quality management systems. This approach has been shown in the guidelines of CAF for education (Common Assessment Framework for Education) (EIPA, 2013). The role of stakeholders of an educational institution is also slightly more emphasized there. In table 1 are presented rules of the CAF system for education which refer to the stakeholders.



Table 1: Role of stakeholders in CAF for Education Principles

CAF for education principles	The role of the university stakeholders
<p><b>1. Results orientation</b> The organization focuses on results. Results are achieved in a way which pleases all of the organization's stakeholders (authorities, recipients, partners and people working in an organization) with respect to the targets that have been set.</p>	The goals formulating should be with regard to all stakeholders. Among listed stakeholders are recipients (e.g. students, graduates, parents), partners (e.g. employers), employees (people in an organization) and authorities.
<p><b>2. Focus on recipient</b> The organization focuses on the needs of both, present as well as potential recipients. It involves them in the development of products and services and the improvement of its performance.</p>	Emphasized is the role of anticipatory approach to the needs of the recipients (stakeholders). It is important to enable the meeting of future expectations of interested parties, which does not belong to a university stakeholders at the moment.
<p><b>3. Leadership and constancy of purpose</b> This principle couples visionary and inspirational leadership with constancy of purpose in changing environment. Leaders establish a clear mission statement, as well as a vision and values; they also create and maintain an internal environment in which people can become fully involved in realizing the organization's objectives.</p>	Management of the institution should be taking into account the leadership to achieve goals and create conditions for internal stakeholders to be fully engaged.
<p><b>4. Management through processes and facts</b> The organization is run from the perspective of a more efficient achievement of results, simultaneously resources and activities are managed as a process and effective decisions are based on the analysis of data and information.</p>	Emphasized is the role of the conscious management of an institution on the basis of reliable information in order to achieve results previously defined regarding the needs of all stakeholders.
<p><b>5. People's development and involvement</b> At all levels people are the essence of an organization and their full involvement enables their abilities to be used for the organization's benefit. The contribution of employees should be maximized through their development and involvement as well as the creation of a working environment based on shared values and a culture of trust, openness, empowerment and recognition.</p>	For the maximization of the contribution of internal stakeholders group, it is necessary to create a good work environment expressed in high standards of organizational culture.
<p><b>6. Continuous learning, innovation and improvement</b> Excellence challenges the status quo and results in change through continuous learning to create innovation and improvement opportunities. Continuous improvement should therefore be a permanent objective of an organization.</p>	A higher education institution should constantly improve itself, in order to be able to efficiently comply with current and future expectations of the stakeholders.
<p><b>7. Partnership development</b> Public sector organizations need partners to achieve their targets thus they should develop and maintain value-adding partnerships. An organization and its suppliers are interdependent, and a mutually beneficial relationship enhances the ability of both to create values.</p>	The importance of cooperation for the benefit of both sides is underlined regarding relations with partners. Representatives of various stakeholder groups might become partners..
<p><b>8. Social responsibility</b> Public sector organizations have to take into consideration their social responsibility, respect ecological sustainability and try to meet major expectations and requirements of the local and global community.</p>	Social responsibility approach requires inclusion of needs and interests of a very wide range of stakeholders for all activities of an institution.

Source: own work on the basis of (EIPA, 2013), (Wiśniewska & Grudowski, 2014)



Among the nine criteria that make up the system of self-assessment according to the CAF for education each consider the role of stakeholder. For example, for criterion 1. *Leadership* in subcriterion 1.3 the issues of appropriate motivating people in the organization are highlighted while in subcriterion 1.4 the highlighted issue is the role of stakeholder relationship management (EIPA, 2013, p. 19). Criterion 2. *Strategy and planning* the role of the stakeholders is emphasized in subcriterion 1.2 which determines the need to collect information about current and future needs of stakeholders (EIPA, 2013, p. 23). In the area of criterion 3. *People* all three subcriteria relate to different aspects of the management of internal stakeholders (EIPA, 2013, p. 27). In criterion 4. *Partnerships and resources* subcriteria 4.1 and 4.2 refer to the building partnerships with external stakeholders and students (EIPA, 2013, p. 31). In criterion 5. *Processes* subcriterion 5.2 refers to the development and supply of stakeholder-oriented services (EIPA, 2013, p. 37). In the area of criterion 6. *Learner-oriented and other key stakeholder-oriented results* both subcriteria consider the need for stakeholder satisfaction measurement using appropriate metrics (EIPA, 2013, p. 48). The area of criterion 7. *People* results also contains two subcriteria relating to the measurement of satisfaction of employees / people in an organization with the use of suitable metrics (EIPA, 2013, p. 48). The area of criterion 8. *Social Responsibility* results as well as the previous two examples emphasize the role of measuring the effects of an organization's activities for external stakeholders who are e.g. members of the public (EIPA, 2013, p. 51). In the area of criterion 9 *The main results* subcriteria 9.1 and 9.2 refer to external results and internal performance. The main point of reference are previously defined goals that include the needs of stakeholders (EIPA, 2013, p. 54). With regard to the need of measuring the satisfaction of various stakeholder groups identified in criteria 6, 7 and 8. a group of measures of stakeholders satisfaction from university services level could be defined. A method based on the study of the aggregate index of satisfaction of stakeholders is presented in the next chapter.

## IMPROVEMENT OF THE UNIVERSITY QMS APPLYING STAKEHOLDER SATISFACTION INDEX RESULTS

The Stakeholder Satisfaction Index (SSI) is an aggregated form of presentation of research results regarding satisfaction of various stakeholder groups. For higher education institutions the satisfaction of 7 following groups of stakeholders can be measured: students, graduates, parents, teaching staff and administrative staff, employers, representatives of authorities.

The SSI index is calculated after the quantitative research. It provides important information about the level of various groups of university services stakeholders satisfaction. These information enables easily pre-defining areas that require changes and improvements the most. Then there is a possibility to conduct a qualitative research, for better understanding of the nature of a problem and to precisely define it.

The Stakeholder Satisfaction Index is a weighted average of the partial indexes calculated for each of the stakeholder groups. Partial SSI index value is calculated from the formula (1):

$$SSI_a = \frac{\sum w_{ij} \times r_{ij}}{j} \quad (1)$$



where:

$w$  — weight of measured stakeholder satisfaction criterion

$r$  — value of assessment of stakeholder satisfaction criterion

$a$  — ordinal number or name of stakeholders group

$i$  — number of assessed criterions

$j$  — number of respondents in stakeholder group (Grudowski & Szeffler, 2015)

Value of aggregated SSI index is calculated from the formula (2):

$$SSI = \sum u_a \times SSI_a \quad (2)$$

where:

$u$  — weight of the partial SSI index

$SSI_a$  — value of the partial SSI index

$a$  — ordinal number or name of stakeholders group (Grudowski & Szeffler, 2015)

The purpose of stakeholder satisfaction survey is to measure the perceived satisfaction level of the various stakeholders. It is a kind of survey research, which aims to gather information about the population of stakeholder's attitudes or opinions (Creswell, 2003, p. 174) on the perceived service quality.

A very important part of stakeholder satisfaction surveys are survey questionnaires, which should include both to answer closed-end and open-end questions. In order to obtain reliable and useful information from, such a research respondents should have the opportunity to express themselves freely. Open-end questions will be useful in the initial analysis of the causes of identified phenomena but closed-end questions will allow an easier comparison of results and calculation of indicators. In order to be able to compare results it is important to maintain unified measurement scales within the closed-ended questions. The very popular Likert's scale can be applied in five or seven grade version. However, it is important to use the same type of scale for all questions regarding opinion.

To ensure that the results obtained in subsequent surveys or surveys for various universities could be compared there should be a uniform method of weighing results within the aggregate indicator applied. To specify weights of partial indexes for instance the results of a survey on universities managers (rectors, deans) can be used. In this survey respondents are asked to rank the stakeholders from the most important to the least important in making decisions about the university development. This is important as the values of weights of partial indexes might have significant influence for the results of SSI index.

The aggregate SSI index and partial SSI indexes can be used as performance indicators of academic institutions. In different areas of the CAF assessment for an education system they can be applied. For example, in the area of criterion 9. *The main results* the





measured aggregate rate of the SSI indicator can be used. Also in the area of criterion 6. *Learner-oriented and other key stakeholder-oriented results* a partial index of graduate satisfaction, student satisfaction index and the index of satisfaction of authorities representatives can be used. In the area of criterion 7. *People results* the index of teaching staff satisfaction and administrative staff satisfaction index can be used. While in the area of criterion 8. *Social responsibility results* SSI index of satisfaction of parents and employers can be used. It should be the responsibility of the organization leadership to choose proper indicators for the corresponding elements of the quality management system. It should reflect the practical possible uses of the information gathered using these indicators. Therefore, the allocation of partial indicators of stakeholders' satisfaction can be modified depending on the needs of an organization.

There are a several elements of the quality management system of a university that the results of stakeholder satisfaction measurement can be used to improve them. These elements are the following:

1. Mission of an institution
2. Vision of an institution
3. Quality policy of an academic institution
4. Goals of the institution (including quality goals)
5. Indicators and methods for measuring quality.

These elements should be verified regularly, and results from stakeholder satisfaction survey can give some important information for these processes. Verification of mission and vision of an institution can be supported by current information regarding the needs of stakeholders and their perception of a service provided by a university. This knowledge can be valuable in improving the mission and vision with the perception of stakeholders and better integration of their requirements, but it should not influence frequent changes in vision and mission. These two elements should form the basis of activities of the institution so it is very important to maintain stability in this part of management system. Similarly, the quality policy can be verified more efficiently through better knowledge of stakeholder satisfaction.

The goals of an academic institution could be revised using reliable information about the needs and possibilities of improvements. To do so, e.g. information gathered during stakeholder satisfaction surveys can prove very valuable. Values of the SSI index or partial SSI indexes can be used as target values of some of the goals of institutions.

In order to achieve a high efficacy of quality indicators methods of measuring quality should take into account different ways of gathering information on the quality offered by academic institution. In addition to the SSI and other quantitative methods, in order to obtain useful input to improve processes, qualitative methods should be used. Initial identification of phenomena studied after stakeholder satisfaction survey can highly increase the effectiveness of methods selection for further analyses.

The improvement of the quality management system can be conducted using various methods. For example, in the method of PDCA (Plan-Do-Check-Act) information from stakeholder satisfaction surveys can support better planning improvements (*Plan* stage) and may be useful in verification of the results of improvements (*Check* stage). Another method of improvement could be Design Thinking. This method consists of five steps: *Empathize, Define, Ideate, Prototype, Test* (Plattner, 2010). Information from stakeholder satisfaction surveys can be useful for at least several stages of the improvement process. During the *empathize* stage it is important to empathize with the recipient's feelings, so recognized attitude of stakeholders regarding the service can greatly support understanding their needs. In order to define the problem, a broad look at the needs of a recipient is needed, so this step can also be assisted by information about SSI and stakeholder satisfaction determinants. The *ideate* stage uses appropriate heuristic methods, and building prototypes, which later will be tested. Information from a stakeholder satisfaction survey can help in the assessment of test solutions.





There are many possibilities for the use of different methods to improve the quality management systems of universities. In many of them information about the perceived stakeholders satisfaction from university services might be important for good planning and effective verification of improvements. Although, the undoubted advantage of this method is the possibility of obtaining both aggregate evaluation index of satisfaction from university services of all stakeholders as well as the information about the satisfaction of particular groups of stakeholders.

## DISCUSSION

Universities have influence and are influenced by many groups of entities interested in a high level of quality of higher education. All of these entities are their stakeholders. In such complex and rapidly changing environment of academic institutions continuous improvement of higher education services is a very important need. Knowledge about the level of quality and determinants of it is crucial for efficient management of institution's QMS. For services, a very important factor is perceived by stakeholders level of quality and satisfaction. Services offered by the university need to measure the level of satisfaction from the point of view of various stakeholder groups. The measure of this level may be proposed by the authors stakeholder satisfaction index (SSI), which is an aggregate indicator of satisfaction measurement. This method considers the most important stakeholder groups. Proposed SSI should be tested in the near future. SSI survey and its components can be implemented in the process of improving the quality management systems of universities as a part of quality measures. But the biggest benefit of SSI research is to gain current knowledge about the stakeholders' perception of university services. Another important benefit is better understanding of their needs. Such knowledge can be used in many processes to improve QMS such as verification of vision, mission and quality policy, and also for the development of an organization appropriate goals.



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# Increasing Awareness of the Future Leaders on Environmental Accounting

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## *ABSTRACT*

Improvements in technology, population growth, greenhouse effects, global warming and as a result of these effects, degradation of the ecological system day by day have led people to take preventive measures for environment. One of the preventive measures is educating individuals on social responsibility and at this point, universities have important tasks. Leaders of the future with the awareness of social responsibility will push their future institutions and managers to have an important and sensitive role in the means of environmental responsibility. Also, accounting has focused on the measurement and reporting of environmental issues as a part of “social responsibility” principle. In this study, bachelor degree business administration students who were enrolled in accounting classes before are selected as the sample. Difference in students’ awareness of and concerns for environmental issues is statistically measured by the primer including environmental accounting and environmental management accounting with the case studies on reporting, best practices. According to the results of this research, the primer prepared for this study has a significant effect on the change of awareness. To raise a generation that is well aware of environmental issues, environmental accounting should be valued more in the curriculum. Increasing environmental accounting literature with cases and best practices is of utmost importance.

*Key Words: Environmental Accounting, Social Responsibility*

## INTRODUCTION

The agenda of countries and business world is formed by environmental pollution, global warming, and change of climate, acid rains, diminishing bio-diversity, and accordingly sustainable development along with similar issues. It is understood that instead of removing environmental pollution it should be prevented. Previously environmental problems was underrated and dealt by other bureaucratic organizations however the importance of this issue is understood lately and organizations responsible for environment purposes are established with those specific responsibilities. Environmental problems are of concern of various fields. For that reason, numerous foundations and organizations in national or international field are developing solution proposals, endeavoring to solve the problem in recent years.

Businesses are appearing as not only profit oriented organizations but also an element that ought to fulfill responsibilities towards society and environment. Businesses are social entities that have social responsibilities. As a necessity of social responsibility principle; voluntarily or as a legal necessity, businesses which have interactions with current economic and social surroundings, provide and render reports associated with corporate social responsibility and environment. These reports are gaining significance day by day due to expansions of traditional performance standards focusing on social and environmental performance indicators in addition to corporate net profit that causes more investors to advocate environmental and social factors effectiveness of corporate value of businesses. In preparation of these reports accounting has significant duty. Accounting information system gains important role on measuring, evaluation and reporting of every kind of information in businesses. Damages to environment caused by businesses are evaluated in that aspect. Beginning with that point accounting-environment relation which is initiated firstly in 1960s is handled intensively as a result of increasing awareness in recent years. Measuring, recognition and reporting of environmental pollution have acquired currency which is called negative exteriority. Mentioned developments brought about concepts such as “environmental accounting”, “social accounting”, and “social cost”

TUSIAD (2005:25) define environmental accounting as regulations towards classification of all activities as environmental, tracking inventory and alterations in it, clarifying real profitability of businesses via incorporation of these alterations with balance sheet by exposing physical and financial dimensions of these changes.

Field professionals who will make use of environmental accounting accordingly accounting students should enhance their knowledge levels about environmental accounting gaining importance. Several views in international area support that the topic of accounting should be included in curriculums. In this study, it is aimed to measure perception levels of executives, financial advisors of future, and students taking accounting education towards environmental accounting. Necessity and importance of environmental accounting education is put forward through results and class discussion questions. In the study, literature review about environmental accounting is performed, previous years' studies are included and lastly application results (classroom testing) are presented.



## THE CONCEPT OF ENVIRONMENTAL ACCOUNTING AND LITERATURE REVIEW

As an extension of social responsibility concept, “social responsibility accounting” and “social accounting” concepts have arisen. Businesses are not only economic entrepreneurs, success or failure of businesses does not rest on just numbers. In that point, accounting or reporting concepts can provide inadequate and misleading info to businesses. By way of environmental accounting or social accounting this inadequacy are meant to be figured out. In recent years gaining of sustainable development concept, businesses start to prepare social responsibility reports. These reports include non-financial information besides financial info.

In 1990s, Triple Bottom Line Reporting method which is put forward by Elkington, provides economic, social and environmental components together. Contrary to traditional reporting that takes account net income as an indicator of performance, it includes a much further concept multidimensional reporting model comprising of social and environmental performance. (Fleischman and Schuele, 2006)

As a natural prolongation of financial reporting, social responsibility reports enlarge business reporting in explaining environmental, social and economic performance of businesses. Like Gray et al. (1995) indicate businesses should contribute to these problems by prioritizing public interest as a necessity of social responsibility principle of accounting. Gray defines environmental accounting as measuring and identifying negative effects of environment, foreseeing them in accounting system and applications and enhancing financial and non-financial accounting systems.

Environmental accounting is deemed as green accounting in literature and in widest meaning it refers to recognition of usage of environmental resources and their effects accordingly generated.

There are nonprofit organizations which can give guidance to businesses about environment and reporting of environment related issues. One of them is CERES “Coalition for Environmentally Responsible Economies”. A coalition including 13 businesses from fortune 500 are using 10 principles named “CERES Principles” (Tuwaijri et al.,: 2004).

CERES Principles cited as follows, are aiming potential emergence of self-governed businesses by highlighting healthy environment and economics relations.

1. Protecting Biosphere
2. Sustainable Usage of Natural Resources
3. Decreasing and Clearing Off Wastes
4. Energy Savings
5. Diminishing Risks
6. Product and Service Safety
7. Environmental Renewal
8. Informing Public



9. Administrative Commitments

10. Inspections and Reports

In 1993, Eco-Management and Audit Scheme (EMAS) is formed by European Commission. EMAS is a voluntary program which is used for upgrading and enhancing businesses performances towards environment. Corporations which are enlisted in EMAS are obliged to fulfill a number of regulations. Member corporations should have an environment policy, efficient environment governing system and their policies ought to be inspected in certain periods. For corporations can manage to carry out these conditions are given EMAS Certificate. (Iraldo et al.,: 2009)

In 1997 SAGE Environmental Consulting, is formed by participation of countries in International Organization for Standardization (ISO) and International Electrotechnics Commission. As a result of SAGE's research in 1993 technic committee 207 (TC 207) is formed and ISO 14000 Environment Governing Standards are started to be prepared. ISO 14000 Standard Series are comprised of two main parts. (www.iso.org, ISO:2015)

International contracts and regulations such as Montreal Protocol, Rio Declaration and Kyoto Protocol which are signed by many governments are increasing the awareness of society thus imposing responsibility to firms on behalf of humanity's and nature's favor. Complying with standards is generally on voluntary basis; however this becomes compulsory when national and international side of commerce is taken account so that businesses can increase their level of competition power. The formation of environmental information affecting economic decisions has arisen as an outcome of environmental accounting and it gains importance. Because of that it is essential to acknowledge and apply environmental accounting as an instrument for managerial accounting which is a subtopic and necessary for reporting. For environmental accounting it can be cited that "a managerial accounting model designed for interior and exterior users for accurate evaluation of environmental performance, upgrading efficiency, defining and calculation of pertains to environment aiming to diminish relevant costs".

According to Buritt et al.(2002) and Bennett and James (2000) EMA should carry the following characteristics i) focusing on internal rather than external users of accounting information and ii) separating identification of the need for monetary and non-monetary information to be gathered and tracked.

In the light of all above processes, accounting education's contributions to measuring of environmental costs, prevention of environmental pollution and raising field professionals has become to the agenda. Many views claim that "green accounting" concept should be covered in course programs. In this view it is effective that many accounting students have no or very little information about environmental accounting.

This phase entails a big responsibility to educational institutions and organizations as it is stated in European Commission's European Multistakeholder Forum which is renewed in 2004 and 2011-2014 Corporate Social Responsibility Strategy Report. In the report it is declared that business schools, universities and other educational organizations have an important role to form relevant corporate social responsibility strategies and necessary capacity, these mentioned organizations are expected to develop corporate social responsibility foundations and awareness in future's corporate executives and employees.

In February 2012, offerings towards field professionals about demands of investors' environmental social and governance are published in meeting of board of executives of IFAC (Yanık, Türker, 2012)

Likewise universities, educational institutions have important duties for raising individuals who have social responsibility awareness. With that educational awareness, leaders of future going to have an important role to urge administrators of corporations to act consciously. Similarly, accountants and relevant professional organizations have significant roles to urge corporate administrators to notice environmental responsibilities as a result of corporate social responsibility.





Özbirecikli and Ural (2007) aim to measure “the importance of ethics and social responsibility” amongst 1,000 accountants in 7 provinces in Turkey. It is shown that any increase in level of importance attributed to ethics and social responsibility causes increased awareness to realize ethical problems and it will lead to more appropriate judgment and behavior in ethical decision taking processes.

Ateş and Senal choose undergraduate and associate degree students as samples to measure accounting’s social responsibility in the context of corporate social responsibility. It is observed that openness to shareholders and societal sensitiveness are seen both a necessity for accounting’s social responsibility and corporate social responsibility by the students. However, they relate it more to corporate social responsibility (Ateş & Senal, 2012). Another study in this area which has took students sample again; determine that they believe environmentally sensitive products can acquire firms earnings in long term (Cengiz et al., 2011).

Dutse and Hilman (2012) state that students do not believe business’ adoption of social responsibility policies has an effect on long term profitability. On the contrary of Dutse and Hilman (2012), Elias (2004) alleged that corporate social responsibility is more important than profitability. However, Wong, Long and Elankumaran (2010) gathered different results on students’ social responsibility perception in USA, China and India. Students in India and United States are inferred as more sensitive compared to Chinese students. Therefore it shows that culture and legislations have important roles in composition of this perception.

Specifically if we examine the studies about environmental accounting, Gordon (1998) in his study indicate that students who take accounting theory as a mandatory course have shown difference about perception of environmental accounting before and after taking such courses. A similar result is reached by Fleischman and Schuele (2006)’s study. These studies emphasize that issues about environmental accounting should be included in curriculums more. (Gray et al. 2001) report that students do not elect environmental accounting courses due to its hardness and unstructured basis.

This paper aims to make contributions to national and international literature, by measuring importance given specifically to environmental accounting and relevant issues from leaders of the future.

## CLASSROOM TESTING

In this paper, bachelor degree business administration students who were enrolled in accounting classes before are selected as the sample. For this paper, difference in students’ awareness of and concerns for environmental issues is statistically measured by the primer including environmental accounting and environmental management accounting with the case studies on reporting, best practices. The method and questions used in testing is derived from the study of Fleischman and Schuele (2006).

Classroom testing is performed in three classes in Dokuz Eylül University, Turkey. Students who are enrolled in accounting classes before are selected as sample. The total sample includes 150 students. All students who selected elective course in accounting area are selected as sample. The number of students in the fourth year is 350, the total sample includes 150 students who selected an elective accounting course. The testing is divided into four steps. In first step, the lecturers administered a questionnaire for the assessment students’ awareness of, concerns for to environmental issues. In the second step, it is asked read the material (hereafter referred to as ‘the primer’) including information about i) environmental accounting ii) environmental management accounting iii) a summary of environmental management accounting application of Xerox iv) a brief information about BP Oil Spill- Gulf of Mexico and v) a section from Apple Environmental Responsibility Report 2014. This primer is presented in appendix 1.



In the third step, the questionnaire is applied again. In the last step, the assessment of the material (primer), videos and case studies are measured by another questionnaire. Each of the two questionnaires' contains Likert-scaled items ranged from one to five.

The results (mean change in response) of questions awareness of and concern for environmental issues, and student opinion on the need for and chance of various parties taking action on these issues are presented in table 1.

*Table 1: Students' awareness of and concern for environmental issues before reading, after reading*

	Mean Response(N-150)		Mean Change in Response
	Before Reading Premier	After Reading Premier	
1) How would you rate your awareness of environmental concerns(a)(pollution of air and water, global warming, acid rain, toxic waste)?	1.67	1.61	-0.06
2) Do you feel young people of your generation are more aware of/ concerned about environmental issues?b	3.24	2.95	-0.29*
3) Do you believe that environmental action should be mandatory ethically for?c			
i) Every individual	1.28	1.19	-0.08*
ii) Business	1.30	1.24	-0.06
iii) Public accountants	1.96	1.59	-0.36*
iv) Governments	1.11	1.11	0.00
4) How would you rate the chances of the following institutions to achieve a betterment of environmental conditions?d			
i) Big business	2.57	2.09	-0.48*
ii) Government	2.61	2.30	-0.31*
iii) International organizations (UN):	2.22	1.91	-0.30*
iv) Private agencies (Greenpeace):	2.04	1.82	-0.21*

<sup>a&b</sup> 1) very aware 2) somewhat aware 3) unaware 4)moderately unaware 5) very unaware;

<sup>c</sup> 1)definitely 2)very probably 3)probably 4)probably not 5)very probably not

<sup>d</sup> 1)very good 2)good barely 3)acceptable 4)poor 5)very poor

\*significant at %5 level.

The results reported in Table 1 indicate that, overall, both the reading and class discussion increased students' awareness of and concern for environmental issues, and strengthened their beliefs about the chance of the institutions (big business, government, international organizations and private agencies) to achieve a better environmental conditions.

After reading the primer, students reported a statistically significant belief about increasing the awareness of young generation about environmental issues. The most substantial change in means for the section focusing on the question about "being mandatory ethically for" is seen in public accounts. After reading, students are giving more chance to big business about achieving a better environment. Lecturers also discussed some topics with students and answered their questions. These questions are i) what are the advantages and disadvantages of environmental reporting for business enterprises ii) to what extent is environmental responsibility an ethical issue? Overall, both reading and class discussion increased students awareness of and concern for environmental issues and strengthened their beliefs to institutions about making a difference in achieving a better environment arena.



Table 2: Students assessment of interest and comprehension of the premier

	Mean Response (n=150)
<b>The environmental accounting</b>	
<i>understandable</i>	2.97
<i>interesting</i>	3.01
<b>The environmental management accounting</b>	
<i>understandable</i>	2.99
<i>interesting</i>	3.17
<b>Environmental Reporting</b>	
<i>understandable</i>	2.96
<i>interesting</i>	3.18
<b>the cases (Xerox, BP Oil spill Mexico and Apple)</b>	
<i>understandable</i>	3.61
<i>interesting</i>	3.98
<b>NASA Images Oil Spill</b>	
<i>understandable</i>	3.29
<i>interesting</i>	3.51
<b>Slide Show about Environmental Management Accounting</b>	
<i>understandable</i>	3.63
<i>interesting</i>	3.42

1-not understandable ve 5-understandable; 1-totally boring ce 5-interesting

In table 2, student opinion on the premier's understandability and interest is summarized. After watching the slides show about environmental cost accounting and NASA images form the space about Oil spill in Gulf of Mexico<sup>1</sup> the survey is done again. As seen in table 2, students found cases more interesting then video and slide shows with animation and sound are more interesting for them. They mentioned that they'd like to watch and listen the topics and they like to share videos compared to documents in social media. They told that they believe that videos, slide shows with sound and animation are giving more information in a short time. It is also in line with the characteristics of generation Z. They want to be a part of social, visual and technological improvements.

<sup>1</sup> These materials are available at <http://education-portal.com/academy/lesson/full-cost-accounting-definition-example.html#lesson> faydalanılmıştır. Nasa görüntüleri gün bazında [www.nasa.gov/goddard](http://www.nasa.gov/goddard) ve NASA | Satellites View Growing Gulf Oil Spill and <http://youtu.be/mCWW5xt3Hc8>

## CONCLUSION

Living with carrying capacity of natural resources of the Earth and keeping and improving the quality of human life are the most important environmental issue that we face today. Implementation of numerous arrangements to decrease the negative effects of industrialization has become a serious current issue. These regulations aim to push responsibility to the firms for the wellbeing of the public. Accounting, which is the language of business in numbers, needs to complete the adoption to the new situation for producing environmentally related information (Gurarda, 2015). Also, accounting has focused on the measurement and reporting of environmental issues as a part of »social responsibility« principle. In this study, bachelor degree business administration students who were enrolled in accounting classes before are selected as the sample. Difference in students' awareness of and concerns for environmental issues is statistically measured by the primer including environmental accounting and environmental management accounting with the case studies on reporting, best practices. According to the results of this research, the primer prepared for this study has a significant effect on the change of awareness. All students who are selected elective courses in accounting area are selected. In the third year and last year, they select course according to their interest. So this result can be generalized to all students in İzmir. To raise a generation that is well aware of environmental issues, environmental accounting should be valued more in the curriculum. Increasing environmental accounting literature with cases and best practices is of utmost importance.

In this study, the increase in awareness is achieved with only the 4-page summary (the primer), slide shows and images. As declared in European Commission 2011-2014 Corporate Social Responsibility Strategy Report and academic researches (Fleischman and Schuele, 2006; Gordon, 1998; Mathews, 2001; Bebbington and Thomson, 2001, Gray et. al, 2001) relevant training materials should take more place in the curriculum for the education of more sensitive generations on environmental issues. We believe that case studies derived from actual events and company's projects, supplementary materials enriched with videos, slide shows and animations will play an active role in the training of generation Y and Z generation.



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## APPENDIX 1

### *Premier:*

Living with carrying capacity of natural resources of the Earth with keeping and improving the quality of human life is the most important environmental issue that human being face today. Rapidly growing industrialization, facilitation of international trade due to technological improvements and expansion of national and international markets which depend on growth of population cause depletion of sources offered by the Earth.

Living with carrying capacity of the Earth is directly related with the sustainability issue. In the 1<sup>st</sup> World Commission on Environment and Development Report (1987) sustainability is defined as “Development that meets the needs of the present without compromising the ability of future generations to meet their own needs” In other terms, corporations of today must not decrease the resources and they should leave the environment without any damage than they began operations.

The regulations issued by local governments, global agreements such as the Montreal Protocol, the Rio Declaration, and the Kyoto Protocol to prevent future environmental damages (with the increase in public awareness for environmental matters) push responsibilities to the firms for the wellbeing of the human being and the World. So with the help of world-wide regulations and national regulations environmental information has increasingly become economically relevant information for decision makers.

Environmental information which is the output of environmental accounting becomes important. Application and adoption of environmental accounting as a tool of managerial accounting for reporting and for company decisions is required. For accurate, reliable and relevant environmental information presented and used in annual reports, corporate sustainability and corporate responsibility reports, environmental reports and in any reports in any format or under any name, businesses should try to define environmental costs incurred while providing goods and services to their customers. At this point, environmental accounting is a necessary tool for the businesses.

## ENVIRONMENTAL ACCOUNTING

Accounting which is the language of business in numbers measures business activities, and communicates these results to decision makers as financial reports.

These financial reports are used by external and internal decision makers such as present and potential investors, lenders, managers, employees, owners, creditors, taxing authorities, and governing organizations.

Accounting can be divided into two fields, financial accounting and managerial accounting. Financial accounting provides information for external decision makers, such as outside investors and lenders. Managerial accounting focuses on information for internal decision makers, such as the company’s managers. Managerial accounting provides data for insiders. (Horngren, Datar, & Rajan, 2012: p.2).

Environmental management accounting is positioned between financial and managerial accounting. In practice most of companies do not prefer to establish cost accounting or/ and managerial accounting. Reports or analyses are derived from financial accounting. Growing importance of environmental information creates a new requirement for calculating and identifying costs related with environment but there are no standard rules for defining, calculating environmental costs due to differences in sectors, environmental cost natures. Some environmental costs are defined as non-financial costs based on input-output analysis and





flow charts of resources. So new accounting practice dealing with environmental costs, environmental impact should be derived according to the managerial accounting and financial accounting.

## WHY DO WE NEED ENVIRONMENTAL MANAGEMENT ACCOUNTING?

As stated before, environmental management accounting “is designed for internal and external financial information users for identifying, calculating and reducing environmental costs for accurate assessment of environmental performance and increasing efficiency”. To provide accurate, fair and reliable information about environmental factors can be listed as the first target. Before identifying the aim, we should ask “why do managers need this environmental information about the performance and efficiency of business operations?”

There are many reasons and benefits of applying environmental management accounting. Briefly, environmental management accounting deserves attention of management due to following reasons<sup>2</sup>

- identify environmental costs for more accurate product pricing
- identify hidden environmental costs in overhead accounts
- decrease or eliminate environmental costs
- gain competitive advantage by designing more environmentally preferable processes, products and services
- meet obligations of national or international environmental laws
- increase company value by enhancing customer value

For better environmental performance of the companies and for the well-being of the World from the view of sustainability, public agencies, governments enforce companies with regulations and laws. Companies that are not in compliance with applicable regulations will face with fines changing in a wide-range. For example, The Erika oil tanker of French oil, Total broke in two, caused polluting 400 kilometers of coastline in 1999. Total was fined 375,000 euros and ordered to pay nearly 200 million euros for damages to the French state and the local fishing industry<sup>3</sup>. Another example, Exxon Mobil Pipeline Co faced a fine of nearly 2.7 million dollars for a pipeline spill of thousands of barrels of Canadian crude oil in an Arkansas suburb in 2012. The Pipeline and Hazardous Materials Safety Administration found nine probable violations of safety rules in the rupture of the nearly 70-year old pipeline that forced residents to evacuate their homes. The agency said Exxon did not adequately account for risks on the pipeline.<sup>4</sup>

Accounting systems can provide up-to-the-moment operational data that can help a firm reduce and avoid wasteful and environmentally damaging practices before they are transformed into significant major expenses in the form of purchases for pollution control devices, fines for exceeding regulatory limits, bad press for endangering the community and clean-up costs. (Schaltegger & Burritt, 2000, p.14)

Environmentally related costs are sometimes hidden in general overhead costs. These costs are often difficult to identify. A good environmental management accounting will help to identify, calculate these hidden costs. These costs are grouped as upfront

2 The list stated above is combined of US EPA (1995), Bennett and James (2000).

3 <http://www.bbc.com/news/world-europe-19712798>

4 <http://www.reuters.com/article/2013/11/07/us-usa-exxon-fine-idUSBRE9A603X20131107>



hidden costs, regulatory and voluntary environmental costs and back-end environmental costs. (US EPA, 1995; Bennett & James, 2000) Detailed information will be presented in environmental costs section.

Companies should not take action just for preventing risks about environmental issues or to avoid from potential fines and penalties that may occur as a result of new environmental law or regulation or any operational risk. Understanding and defining of environmental costs for every business is vital for accurate cost calculation. They can be hidden costs, contingent costs or costs for image, etc. To have better control on and understanding about costs may give opportunity to the firms for redesigning or designing of products or services as ecological –friendly products or services.

To be prior in designing products and services according to environmental preferences will also create competitive advantage. As stated in Bennett and James (2000) gaining a better understanding of medium to long-term environmental costs and benefits can help to neutralize threats and ensure that opportunities are taken. This will also create an opportunity for eco-innovation.<sup>5</sup>

Another benefit of implementing effective environmental management accounting is enhancing customer value and corporate image. Better application of environmental management accounting will create costs saved by not polluting and by having a better product image and better employee relationships. These are listed as indirect benefits of environmental management accounting. Indirect effects are intangible. For example, they can include an enhanced image, increased customer and employee satisfaction, the transfer of know-how (intellectual capital) and the development of new markets for environmentally benign products. (Schaltegger & Burritt, 2000, p. 86)

Types of management decisions benefiting from environmental cost information according to US EPA (2005) can be listed as:		
- Product Design	- Waste Management	- Risk Management
- Capital Investments	- Purchasing	- Product Pricing
- Process Design	- Cost Allocation	- Environmental Compliance Strategies

## ENVIRONMENTAL REPORTING

Companies tend to evaluate performance with financial indicators. In rapidly changing environment due to globalization and technological improvements, focusing only on financial indicators is not enough.

Elkington, (1988) suggests that financial reporting should expand beyond traditional bottom-line as net income, success indicators such as social and environmental performance should be also taken into account.

Many companies no longer see corporate responsibility as a moral issue, but as core business risks and opportunities. More and more investors accept that environmental and social factors put company value at stake. this leads to the question of what the potential financial impacts of those risks and opportunities could be and what the company is doing to mitigate or maximize them.

Demands for greater transparency and accountability are growing from investors and from civil society. Final approval by the European Parliament and the European Council is pending for the movement of corporate social responsibility from being voluntary to mandatory. If it passes, Some 6,000 large companies will be required to report on their policies on diversity, social

<sup>5</sup> Fussler and James (1996) defines eco-innovation as ‘new products and processes which provide customer and business value but significantly decrease environmental impacts’.

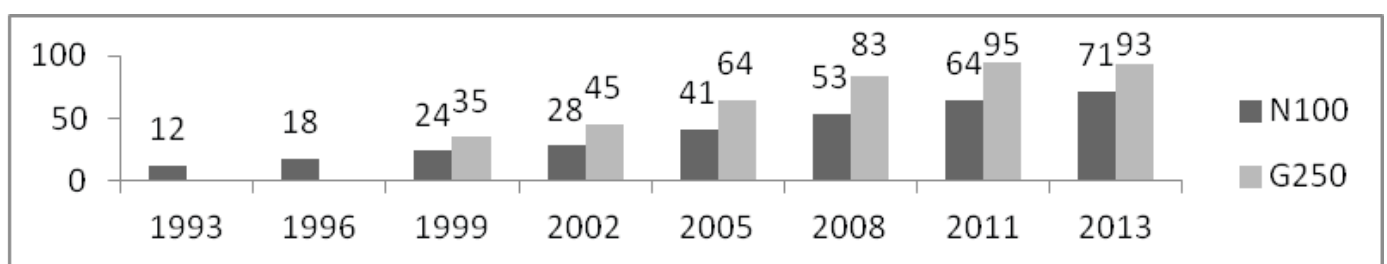


issues and on corruption, as well as the risks they pose to human rights and to the environment, including through their supply chains. As such they will be making themselves accountable not just to their shareholders, but to stakeholders as well.<sup>6</sup>

The number of companies which issue stand-alone corporate reports or/and a corporate responsibility part in annual reports has been increasing.

Environmental issues, environmental performances are a part of these reports but these reports are voluntary reports and there are no standardised rules for these reports.

#### *Percentage of companies since 1993*



Source : KPMG 2013 Survey of Corporate Responsibility Reporting 2013. N100 refers to assessment corporate responsibility reporting among the 100 largest companies in 41 countries: 4,100 companies in total. G250 refers to corporate responsibility reporting assessment the quality of reporting among the world's largest 250 global companies.

According to KPMG (2013) many companies no longer see corporate responsibility as a moral issue, but as core business risks and opportunities. More and more investors accept that environmental and social factors put company value at stake. This leads to the question of what the potential financial impacts of those risks and opportunities could be and what the company is doing to mitigate or maximize them. Very few companies are yet declaring any quantified risks to the bottom line in their corporate responsibility reporting. Companies need to be prepared for this to change and should start to integrate the top and bottom-line implications in their business scenario planning and risk management. Only a small number of G250 corporate responsibility reports (5 percent) include information on the financial value at stake through environmental and social risk. Most G250 CR reports (87 percent) identify at least some social and environmental changes (or 'megaforces') that affect the business. Climate change, material resource scarcity and energy and fuel are the most commonly mentioned.

As stated in Rikhardsson et al. (2005) the field of environmental accounting management is still diffusing, and there is no single optimal route through which EMA is likely to become applied to companies and other organizations with environmental impacts, but there are a number of different possible mechanisms, the relative importance of which will depend on the situation of the particular organization.

In this diffusion, governments, investors, the media, shareholders, environmental funds, non-governmental organizations and pressure groups play an important role. Especially governments with the help of international standards and rules issued by United Nations, OECD or/ and International Accounting Standards Board should increase environmental obligations, rules and reports for living with carrying capacity or natural resources of the Earth with keeping and improving the quality of human life.

<sup>6</sup> <http://www.theguardian.com/sustainable-business/eu-reform-listed-companies-report-environmental-social-impact>



## CASE - ENVIRONMENTAL MANAGEMENT ACCOUNTING - XEROX

In 1990s, Xerox's faced with extensive and expensive logistics operation that resulted in substantial environmental impacts throughout the logistics chain, including high volumes of waste from the packaging materials due to transferring to 68 delivery points across Europe. They set-up a multi-functional project team including members from its environmental management and accounting functions to carry out re-design of logistics systems. The team concluded that 23 different types of copiers, each of which required its own specifically designed packaging were the main driver of both costs and environmental impacts. They found disposal process after delivering (such as taking back to factories for re-use) impractical and uneconomic effort. The solution of this multi-functional team was to replace present packaging approach with a system using a single standard container (tote) that could be used for all product-lines and then returned and re-used after each delivery. The valuable findings of environmental-related project was i) standardization of re-usable transport packaging from over 8,000 variants down to ten has generated savings of 2.1 million dollars per annum and greatly reduced waste. ii) ,increased use of 100% recycled packaging materials, reducing weight by an average of 5 kilos and cost by 20 dollars per unit iii) Introduction of two standard re-usable totes for internal transport, saving 1.2 million dollars per annum (Bennett & James, 2000, p. 347)

## CASE : BP OIL SPILL- GULF OF MEXICO

200 million gallons of crude oil was pumped into the Gulf of Mexico for a total of 87 days, making it the biggest oil spill in U.S. history in 2010. The oil spill was called the "worst environmental disaster the US has faced" by White House energy adviser Carol Browner 6,000 total miles of coastline have been affected, including the coasts of Texas, Louisiana, Mississippi, Alabama, and Florida. Even though the gushing well was capped in July 2010, oil is still washing up on shores, which might cause long-term damages to people living in the area. The initial oil rig explosion killed 11 people and injured 17 others. BP's stock fell by 52% in 50 days on the New York Stock Exchange, going from \$60.57 on 20 April 2010, to \$29.20 on 9 June, its lowest level since August 1996. On 25 June, BP's market value reached a 1-year low. The company's total value lost since 20 April was \$105 billion. Investors saw their holdings in BP shrink to \$27.02, a nearly 54% loss of value in 2010.[71] A month later, the company's loss in market value totalled \$60 billion, a 35% decline since the explosion. At that time, BP reported a second-quarter loss of \$17 billion, its first loss in 18 years. This included a one-time \$32.2 billion charge, including \$20 billion for the fund created for reparations and \$2.9 billion in actual costs President Obama announced that his administration would create a \$20 billion spill response fund. 7

## EXAMPLE FROM APPLE ENVIRONMENTAL RESPONSIBILITY REPORT 2014 (COVERING 2013 FISCAL YEAR)

".....Apple's 2014 Environmental Responsibility Report, covering fiscal year 2013, highlights the progress we've made toward that goal. We have set three priorities for our work where we believe Apple can make the most impact going forward:

- *Reduce our impact on climate change by using renewable energy sources and driving energy efficiency in our products.*
- *Pioneer the use of greener materials in our products and processes.*
- *Conserve precious resources so we all can thrive.*

7 <https://www.dosomething.org/facts/11-facts-about-bp-oil-spill>



*This report details how we are approaching each of these priorities, and highlights the progress we have made to date.”*

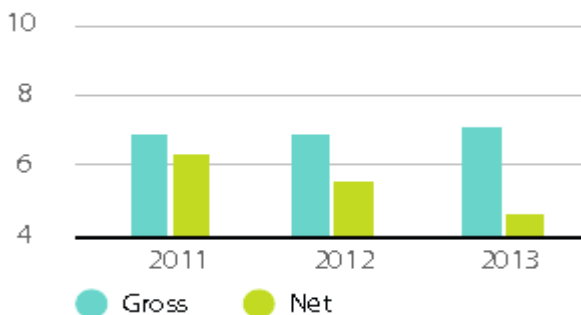
*...“For starters, every one of our data centers is powered entirely by clean sources such as solar, wind, and geothermal energy. So whenever you download a song, update an app, or ask Siri a question, the energy Apple uses is provided by nature.*

*Of course, the cleanest energy is the energy you never use. That’s why we’ve reduced the average total power consumed by Apple products by 57 percent since 2008— helping reduce our customers’ electricity bills and carbon emissions. And each one of our products far exceeds the strict energy efficiency guidelines set by ENERGY STAR”*

**Product usage**

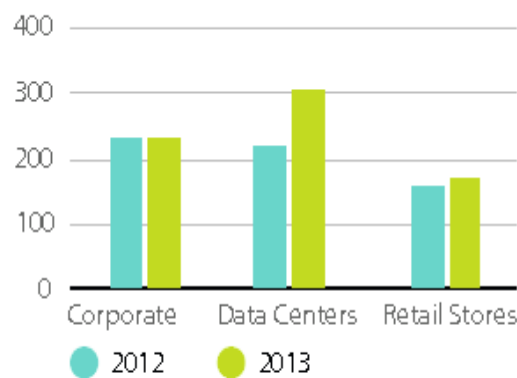
*...“The energy consumed by our products during everyday use represents a big share of our carbon footprint. So we look at three ways to reduce a product’s energy consumption: more efficient power supplies to bring electricity from the wall to the device, more efficient hardware, and smarter power management software. As a company that designs both the hardware and the software for its products, we’re able to use that technological collaboration for greater energy efficiency. OS X, the Mac operating system, never misses a power-saving opportunity, no matter how small. It puts hard disks to sleep and runs processors in an ultralow power mode when you’re not hard at work on your Mac”*

**GHG Emissions (Metric Tons CO<sub>2</sub>e/Employee)**



Emissions data includes natural gas and electricity consumed at Apple-owned and leased facilities worldwide, in addition to employee commute, fleet vehicles, and business travel.

**Electricity Usage By Business Unit (M kWh)**



Electricity and natural gas data is compiled from utility consumption data for sites owned and leased by Apple.



# Tax Compliance in Turkey: Empirical Evidence

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## *ABSTRACT*

There is little known about general tendencies of tax compliance in Turkey. Among different factors tax compliance depends on trust in tax authorities and norms. This paper contributes to the tax compliance literature, which still lacks empirical evidence in Turkey. A quantitative survey (N = 118) in Turkey (İzmir) was conducted to explore the relationship between trust and norms toward tax compliance. M2 tests performed for this study suggests that national norms and voluntary tax compliance are found as statistically significant dependent variables with a positive linear trend.

*Keywords: Tax compliance, Turkey, norms, trust*

## INTRODUCTION

The tax compliance literature has shown the relevance of going beyond a neoclassical approach when trying to understand why citizens pay taxes (Torgler & Schneider, 2007). The assumption of the standard model of tax compliance (Becker 1968; Allingham & Sandmo, 1972) is that a rational taxpayer assesses the costs and benefits of evading taxes and if the expected benefits outweigh the costs then the taxpayer will evade tax. To resolve a puzzle of tax compliance, many researchers have argued that tax morale can help explain the high degree of tax compliance (for an overview see Torgler, 2007), since tax morale measures not individual behavior but individual attitude and can be defined as a moral obligation to pay taxes and a belief that paying taxes contributes (Torgler & Schneider, 2007).

There is little known about general tendencies of tax compliance in Turkey (Tunçer, 2002; Çelikkaya, 2002; Saraçoğlu, 2008; Yıldız, 2010; Çiçek *et al.*, 2006; Aktan, 2006). One of the main goals of future tax reforms in Turkey (Performance Programme of Turkish Revenue Administration 2014; National Programme of Turkey for the Adoption of the EU Acquis 2008) is to introduce modern, advanced tax systems in line with EU as well OECD standards requirements. Therefore, governments need to design a tax compliance system that will not discourage taxpayers from participating and mutual cooperation; tax administration must move from control to service approach. Successful tax systems are underpinned by administrative approach, which recognizes that voluntary compliance is optimized through an appropriate balance of taxpayers' education (Chau & Leung, 2009; Kirchler *et al.*, 2008) and assistance that help them and their advisors to understand their obligations and rights, simple laws and procedures, and risk-based verification programmes.

*Table 1: Tax Indicators*

Indicators	Turkey	EU&EFTA average
Total tax rate*	40.2	41.1
Time to comply in hours	226	179
Number of tax payments per year	11	13.1
Overall paying taxes rankings (among 185 countries)	71	

Source: PricewaterhouseCoopers (PwC) –Tax Payments 2014 Report

\*The total tax rate measures the amount of taxes and mandatory contributions borne by the standard company as percentage of the commercial profit.

According to the report of PwC Paying Taxes 2014 Report, Turkey is in worse position compared to EU average measured by collected taxes and contributions and regarding of complexity of an economy's tax compliance system. Therefore, countries will have to analyze the reasons for relatively bad position in the field tax compliance. A better understanding of the drivers of taxpayers' behaviour can allow tax administration to identify and implement new policy measures more effectively.

This paper contributes to the tax compliance literature, which still lacks empirical evidence in Turkey through a detailed questionnaire. Before considering the findings in detail, section II of the paper presents a review of factors of tax compliance; Section III introduces the model, presents the main hypothesis, data and methodology. The empirical findings are in Section IV and Section V finishes with some concluding remarks.





## THEORETICAL BACKGROUND: A REVIEW OF FACTORS OF TAX COMPLIANCE

A number of economic factors have been considered important for explaining tax compliance. In the tradition of tax compliance research (Bărbuțămîșu, 2013). However the taxpayers behaviour can not be explained solely by purely economic factors (Alm *et al.*, 2012). Therefore, a trend has changed from primarily economic factors to factors of behavioural economics. A comprehensive review of the tax compliance literature was concluded by Jackson and Milliron (1986), whom identified 14 key factors, which were categorized by Fischer and associates (Fischer *et al.*, 1992) into four groups in their expanded model (Fischer Model): demographic (e.g. age, gender, education); noncompliance opportunity (e.g. income level, income source, occupation); attitudes and perceptions (e.g. fairness of the tax system, peer influence); and tax system/structure (e.g. complexity of the tax system, probability of detection and penalties, tax rates). Chau & Leung (2009) suggested a partial refinement to Fisher model by incorporating another important environmental factor – culture (social norms, ethical values), attitudes and perceptions (fairness of tax system, peer influence).

The review of factors of tax compliance and the existing findings are presented in the next subsections.

### ECONOMIC FACTORS

Among the economic factors that affect tax compliance are tax rates, tax audit and perception of government spending (Rizal Palil, 2010).

The tax rate is an important factor in determining tax compliance behaviour (Clotfelter, 1983), yet the exact impact of changing marginal tax rates is still unclear and subject to debate (Kirchler, 2007). While some authors argue that raising marginal tax rates will probably encourage taxpayers an increase in tax evasion (Allingham & Sadmo, 1972; Slemrod, 1985; Witte & Woodbury, 1985; Ali *et al.*, 2001; Torgler, 2007); there are others that present the opinion that reducing tax rate does not necessarily increase compliance (Trivedi *et al.*, 2004; Kirchler, 2007; Papp & Takáts, 2008). Allingham and Sandmo (1972) conclude- that tax rates appeared to be insignificant in determining tax evasion. However, Tanzi (1980) illustrated that tax rates were positively correlated with tax evasion by using aggregate data in the United States. Kirchler *et al.* (2008) perceive- that tax rates have a mixed impact (increase in tax rates might have positive or negative impact on evasion) and the impact of the tax rate would depend on the degree of trust (Kirchler *et al.*, 2008).

Tax audits, audit rates and prior audit experience (Andreoni *et al.*, 1998) have been ambiguously discussed in relation to tax compliance (Rizal Palil, 2010; Alm, 1999). Previous studies (Slemrod *et al.*, 2001; Kirchler *et al.*, 2008) have evidenced that tax audits play an important role in increasing voluntary compliance. Audit rate and the thoroughness of the audits could potentially encourage taxpayers to be more prudent in completing their tax returns (Rizal Palil, 2010).

Studies on the relationship between the specifics of actual government spending and tax compliance, particularly on tax evasion, are very limited. The government should spend taxpayer money prudently spend taxpayers' money because the way in which the government spends the money produces different levels of compliance. Taxpayer's perceptions are potentially important in determining their compliance behaviour. (Rizal Palil, 2010).

## INSTITUTIONAL FACTORS

Institutional factors include taxpayers' perceptions of the efficiency of the role of the tax authority/government, the simplicity of the tax returns as tax system more generally as well as the probability of being detected (Rizal Palil, 2010).

The tax system must have the following characteristics to positively affect tax morale: a tax system must be fair, must cause minimal interference in economic decisions respectively, must minimize efficiency losses and cost of tax collection; management costs and tax obligations must be low compared to the total amount of taxes collected (Stanovnik, 1998). Fiscal discipline increases by increasing the confidence of taxpayers in the legal system and government. Empirical analyzes (Feld & Frey, 2002a, 2002b) have shown that the active participation of citizens (direct democracy) in the formulation of laws, regulations and tax system increases fiscal discipline. If taxpayers believe that the government, the judiciary and the legal system is working well and that corruption is not present, they will be more inclined to pay taxes. Unclear and complicated legislation may result in the unintentional handing of false tax information, as taxpayers do not know how to properly fill out tax forms, or simply do not understand the laws of terminology. Frequent irregularities and problems in humans evoke resistance and dissatisfaction with the tax audit (Torgler, 2002). Alinghami and Sandmo (see Rizal Palil, 2010) opine that taxpayers will always sign their income correctly if the probability of detection is high. However Cummings et al. (2005) findings are that the fear of sanctions does not have as big an impact on fiscal discipline as expected. Governments can have much bigger impact on fiscal discipline by improving the public opinion of the public sector rather than through intimidation and heavy fines.

## SOCIAL FACTORS

The social factors comprise (Rizal Palil, 2010) ethics and attitudes (norms) toward tax compliance, perceptions of equity and fairness, changes to current government policy and referent groups.

The evidence clearly shows various attitudes towards taxation, such as tax ethics (Hauptman, 2012; Belak & Hauptman, 2011; Hauptman & Matajić 2012; Belak *et al.* 2010) and the fairness of the tax system and shows an influence on the inclination towards tax evasion (Jackson & Milliron, 1986). As suggested by previous studies (Kirchler *et al.*, 2008; Trivedi *et al.* 2004; Orviska & Hudson, 2002; Jackson & Milliron, 1986), attitudes and ethics remain important in determining evasion behavior. Based on Ajzen (1991) the theory of reasoned action or the intention to evade will encourage a taxpayer to behave negatively toward taxation and thus attempt to under-report income. On the other hand, attitudes towards the tax authority are also important as tax attitudes and ethics generally depend on perceived use of the money collected by the government (Kirchler *et al.*, 2008).

In general, if the norms held by taxpayers favor tax compliance, voluntary tax compliance will result (Bărbuțămîșu, 2011). On the level of national norms (Bărbuțămîșu, 2011; Kirchler, 2008) norms become cultural standards, often mirrored in the actual law. When favorable national norms are established (Bărbuțămîșu, 2011; Fjeldstad, 2004), trust in political leadership and administration will lead to voluntary tax compliance. Therefore, national norms find their expression in tax laws and the role given to tax authorities, having a direct influence on their power (Kirchler *et al.*, 2008). Norms where all citizens are perceived as contributing their fair share help to increase trust in the authorities (Kirchler *et al.*, 2008).

Societal norms (Hofmann *et al.*, 2008) of tax behaviour are reflected partly in tax laws, and partly in tax morale and civic duty. Studies on tax behaviour in different countries highlight the importance of societal norms and confirmed national differences (Alm *et al.*, 2004; Alm & Torgler, 2006; Chan *et al.*, 2000; Troutman & O'Bryan, 2000; Schneider, 2004; Torgler, 2003; Torgler & Schneider, 2007).

Chau & Leung (2009) believe that growing dissatisfaction with the fairness of a tax system is the major causes for increasing tax non-compliance. One of the main principles of the taxation system design is equity or fairness, which can be perceived via



two dimensional views (see Chau & Leung, 2009): horizontal equity (people with the same income or wealth brackets should pay the same amount of taxes), and vertical equity (taxes paid increase with the amount of the tax base). OECD (2010) defines three types of fairness in taxation: distributive fairness (the perception that government acts as a wise spender of tax revenues); procedural fairness (the perception that the tax administration adheres to procedures that are fair in dealing with taxpayers); and retributive fairness (the perception that the tax administration is fair in applying punishments when the rules are broken). Procedural and retributive fairness can be influenced by tax administrations, whilst distributive fairness depends on policymakers.

If tax system is perceived as unfair, tax non-compliance is likely to increase (e.g. Baldry, 1987; Cowell, 1992). While when tax system is experienced as fair, trust and consequently voluntary compliance might increase (see Kirchler *et al.*, 2008). Neutrality of procedure, trustworthiness of tax authorities and polite, dignified, and respectful treatment (Tyler & Lind, 1992) are the components essential for perceived fairness (see Kirchler *et al.*, 2008). Trust and voluntary compliance is likely to increase on all three levels, if tax authorities treat taxpayers equally, in a respectful and responsible way (*ibid.*). With regard to retributive justice, unreasonable and intrusive audits and unfair fines lead to negative attitudes toward the tax office and taxes in general; perceived justice might increase voluntary compliance (Kirchler *et al.*, 2008).

Eriksen & Fallan (1996) also reveal that educating the tax payer through providing more knowledge of the tax system will encourage tax compliance.. Also the government decision and changes to policies in accordance with the economic and political situation have a significant impact on tax compliance. An increase in tax rebate by the government (Hasseldine & Hite, 2003) is likely to increase taxpayer compliance.

## INDIVIDUAL FACTORS

Decisions either to evade or not to evade taxes are heavily reliant on taxpayers' personal judgment (Barrand *et al.*, 2004). Other influences, such as that of peers might also affect the decision, but the final decision is made by the individual. Personal circumstantial factors like financial constraints and awareness of penalties and offences are therefore likely to have a significant impact on taxpayer compliance behaviour (Rizal Palil, 2010).

Personal/individual norms (Hofmann *et al.*, 2008) comprise personality factors, moral reasoning, values, religious beliefs, etc. As Hofmann *et al.* (2008) emphasis empirical studies show that the personality factor 'Machiavellianism' furthers tax evasion (Adams & Webley, 2001; Kirchler & Berger, 1998), while altruistic orientation and community values advance tax compliance (Braithwaite, 2003). Kirchler *et al.* (2008) sees that individual norms are related to moral reasoning, authoritarianism and Machiavellianism, egoism, norm dependency, and values. Voluntary compliance is more likely, if moral reasoning or tax ethics is more developed.

Kirchler *et al.* (2008) claim- a connection between fines and trust/power. Also educating taxpayers and keeping them well informed with the sentences of being an evader may be important, as a prevention measure is better than cure (imposition of a penalty) (Rizal Palil, 2010). If the taxpayers are aware of the offences they are committing when evading tax and the consequences of being non-compliant taxpayers, they might reduce their tendency to evade tax. On the other hand, if they are not aware of the implications of being dishonest in terms of the offence they are likely to be charged with if caught, they might be more inclined to cheat because they presume that they will not be detected and could save money.

## OTHER FACTORS

There are also other factors (predominantly demographic) that may affect tax compliance behaviour like age, income level, culture, general level of education, and gender (Devos, 2005).

Age can have negative effect (i.e. Tittle, 1980; Wahlund, 1982) as well positive effect on compliance (Jackson & Milliron, 1986; Clotfelter, 1983; Beron *et al.*, 1992). Some studies have found no relationship at all between age and compliance (Porcano, 1988).

Previous theoretical model suggests that as income rises, tax evasions should increase over most ranges (Andreoni *et al.*, 1998). Houston and Tran (2001) establish that the respondents in the lower income group tend to have a lower proportion of tax compliance by under-reporting income and by over-claiming expenses than their counterparts in the higher income group. The direct relationship between income level and tax compliance remains unclear (Jackson and Miliron, 1986; Roth *et al.*, 1989).

On the level of national norms, - their expression in tax law and the role given to tax authorities, norms become cultural standards (Kirchler, 2008; see Ženko & Mulej, 2011). Culture has a significant impact on compliance since different social norms and ethical values create different incentives and levels of tax compliance. Hofstede (1990) identifies four underlying societal values (individualism, power distance, uncertainty avoidance and masculinity) and in his model, individualism and collectivism refer to the degree of interdependence a society maintains among individuals.

Two aspects of education have been distinguished and considered to be important for attitudes towards tax compliance (Chau & Leung, 2009): the general degree of fiscal knowledge and the degree of knowledge involving evasion opportunities (Groenland & Veldhoven, 1983). Longer education increases the knowledge in taxation (Kinsey & Grasmick, 1993; Kirchler *et al.*, 2008) and is positively related to tax compliance (Kirchler *et al.*, 2008).

The impact of gender on tax compliance is inconsistent. Early research (Tittle, 1980; Jackson and Milliron, 1986) reports that females are more likely to tax compliance. A study by Houston and Tran (2001) indicates a higher proportion of tax evasion committed by women than men while a study by Richardson (2008) continue to find no association between gender and compliance.

## EMPIRICAL RESEARCH

In the empirical part perceived trust in authorities, norms (national/social) and tax compliance (voluntary/enforced) are measured.

Previous research on tax behaviour has addressed ethical standards as personal, social and national norms. On the level of national norms (Bărbuțămișu 2011) norms become cultural standards, often mirrored in the actual law. A norm where all citizens are perceived as contributing their fair share would certainly help to increase trust in the authorities (Kirchler *et al.*, 2008). Muehlbacher *et al.* (2011) test the key variables trust within the “slippery slope” framework on taxpayers in Austria, the United Kingdom, and the Czech Republic and confirm that voluntary compliance depends primarily on trust in tax authorities. The impact of gender on tax compliance is inconsistent. While Tittle (1980) and Jackson & Milliron, (1986) report that females are more likely to tax compliance, Houston and Tran (2001) indicate a higher proportion of tax evasion committed by women than men. Richardson (2008) does not find any association. Kinsey & Grasmick (1993) and Kirchler *et al.* (2008) found that longer education is positively related to tax compliance.

Given the availability of prior literature on tax compliance and a need to examine the non-economic factors which influence the individual's compliance decision, the following hypotheses have been examined in this study:

- *Hypothesis one:* Norms (national and social) are related to the voluntary compliance.
- *Hypothesis two:* Trust in tax authorities is related to the voluntary tax compliance.



- *Hypothesis three:* Gender, level of education and the perception on tax compliance are independent variables.

## PROCEDURES AND MATERIALS

A questionnaire was used that consisted of several different scales that capture the participants' agreement with asked questions; the ones we have used in the current study are presented below in detail. The questionnaire was developed and partially adapted from different studies (Murphy & Byng, 2002; Hofmann *et al.*, 2008; Hartner *et al.*, 2008; Gangl *et al.*, 2013; Kirchler, 2007) and it was carefully translated from English into Turkish. To check the validity of the translations, the questionnaire was translated back into English. The variables of interest — perceived trust in authorities, norms (national/social/personal), voluntary and enforced compliance — were measured by five Likert-type scales. The participants were asked to indicate their degree of agreement with two or three statements in each scale (1 = “strongly agree” to 5 = “strongly disagree”).

Perceived trust in authorities was measured by participants' agreements with following statements on the trustworthiness of tax authorities: *The Turkish Tax Office (Revenue Administration–Turkey) is reliable and trustworthy (T1)*; *How much trust do you have in parliament (T2)*

Norms were measured by participants' agreements with following statements: *I feel a sense of pride in being a member of the Turkish community (national norms, N1)*; and *People in my environment would strongly disapprove if I would not meet my tax obligations (social norms, N2)*.

Voluntary and enforced tax compliance was measured by participants' agreements with following statements: *I pay my tax as a matter of course (voluntary compliance, voluntary Q1)*; *I would also pay my tax if there were no controls (voluntary compliance, voluntary Q2)*; *I pay tax because the risk of being checked is too high (enforced compliance, enforced Q1)*; *I feel that I am forced to pay tax (enforced compliance, enforced Q2)*.

## PARTICIPANTS, METHODOLOGY AND RESULTS

Data were collected via questionnaires. The participants were recruited from a representative data pool and were not remunerated for their participation in the survey. The bases for the analysis presented here were  $n = 118$  taxpayers in Turkey, İzmir in 2014. The 118 students enrolled in master programme of Business Administration were selected as sample. The total number of master students are 272 students.

The socio-demographical variables collected were gender, age, level of status, level of education, religion, and marital status.

The collected data were analyzed with the R Program. For the ordinal data, as suggested in Agresti (2007), another form of  $\chi^2$  test (or chi-square test),  $M^2$  was performed. A null hypothesis of independence “ $H_0: \rho = 0$  indicates there is no linear trend between variables, variables are linearly independent” was tested.

Demographic composition of the data is presented in Table 2.



Table 2: Demographic composition

Groups	Turkey (n= 118)	
	M	SD
Age	29.84	11.43
	N	%
<b>Gender</b>		
– male	64	54%
– female	54	46%
<b>Level of education</b>		
– no education	1	1%
– primary school or less	0	0%
– trade/secondary school	1	1%
– higher school/university or more	111	94%
– unknown	5	4%
<b>Status</b>		
– student	78	66%
– employee	32	27%
– unemployment	1	1%
– retired	7	6%
<b>Religion</b>		
– Christianity	1	1%
– Islam	111	94%
– Hinduism	1	1%
– Buddhism	3	3%
– Non-believer	2	2%
<b>Marital status</b>		
– single	77	65%
– married	34	29%
– divorced	3	3%
– widowed	4	3%

Source: Own research

Analyses of joint distribution of answers for voluntary compliance and enforced compliance show that 39.4 % of taxpayers strongly agree on voluntary compliance questions (Table 3).





**Table 3: Joint Distribution – Voluntary Compliance Questions**

<i>Voluntary</i>		<i>Q2: I pay my tax as a matter of course.</i>				
<i>Q1: I would also pay my tax if there were no controls.</i>		<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
<i>1</i>		39.4%	1.8%	1.8%	2.8%	0.9%
<i>2</i>		1.8%	1.8%	3.7%	1.8%	0.0%
<i>3</i>		3.7%	4.6%	3.7%	2.8%	0.0%
<i>4</i>		5.5%	0.9%	4.6%	8.3%	0.0%
<i>5</i>		0.9%	1.8%	0.9%	0.9%	5.5%

Source: Own research

As seen in Table 4, 24.8 % of taxpayers strongly agree on two enforced compliance questions.

**Table 4: Joint Distribution – Enforced Compliance Questions**

<i>Enforced</i>		<i>Q2: I feel that I am forced to pay tax.</i>				
<i>Q1: I pay tax because the risk of being checked is too high.</i>		<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
<i>1</i>		24.8%	0.9%	0.0%	1.8%	4.4%
<i>2</i>		2.7%	3.5%	0.9%	5.3%	0.0%
<i>3</i>		3.5%	1.8%	3.5%	4.4%	0.0%
<i>4</i>		15.0%	1.8%	6.2%	6.2%	3.5%
<i>5</i>		1.8%	0.0%	1.8%	1.8%	4.4%

Source: Own research

For the robustness of the data, the percentage by fixing the questions was identified. In Table 4, the distribution of the answers of “I pay my tax as a matter of course (voluntary Q1)” for the other voluntary compliance question “I would also pay my tax if there were no control (voluntary Q2)” is reported.

**Table 5: Row Distribution of Voluntary Q1 to Voluntary Q2.**

<i>Voluntary</i>		<i>Q2: I would also pay my tax if there were no controls</i>				
<i>Q1: I pay my tax as a matter of course.</i>		<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
<i>1</i>		76.8%	3.6%	7.1%	10.7%	1.8%
<i>2</i>		16.7%	16.7%	41.7%	8.3%	16.7%
<i>3</i>		12.5%	25.0%	25.0%	31.2%	6.2%
<i>4</i>		16.7%	11.1%	16.7%	50.0%	5.6%
<i>5</i>		14.3%	0.0%	0.0%	0.0%	85.7%

Source: Own research

The row distribution shows that 76.8 % taxpayers who strongly agree on the voluntary Q1 also selected strongly agree on the voluntary Q2. The highest percentage is observed on the option “strongly disagree” (Table 5).





Table 6: Column Distribution of Voluntary Q2 to Voluntary Q1.

Voluntary Q1: I pay my tax as a matter of course.	Q2: I would also pay my tax if there were no controls				
	1	2	3	4	5
1	84.3%	20.0%	25.0%	28.6%	9.1%
2	3.9%	20.0%	31.2%	4.8%	18.2%
3	3.9%	40.0%	25.0%	23.8%	9.1%
4	5.9%	20.0%	18.8%	42.9%	9.1%
5	2.0%	0.0%	0.0%	0.0%	54.5%

Source: Own research

84.3 % taxpayers who strongly agreed on the voluntary Q2 also select option strongly agree on the voluntary Q1 (Table 6).

Table 7: Row Distribution of Enforced Q1 to Enforced Q2.

Enforced Q1: I pay tax because the risk of being checked is too high.	Q2: I feel that I am forced to pay tax.				
	1	2	3	4	5
1	77.8%	2.8%	0.0%	5.6%	13.9%
2	21.4%	28.6%	7.1%	42.9%	0.0%
3	26.7%	13.3%	26.7%	33.3%	0.0%
4	45.9%	5.4%	18.9%	18.9%	10.8%
5	18.2%	0.0%	18.2%	18.2%	45.5%

Source: Own research

In Table 7, the distribution of the answers of “I pay tax because the risk of being checked is too high (enforced Q1)” for the other enforced compliance question “I feel that I am forced to pay tax” (enforced Q2)” is reported. 77.8 % taxpayers who strongly agree on the enforced Q1 also selected strongly agree on the enforced Q2.

Table 8: Column Distribution of Enforced Q2 to Enforced Q1.

Enforced Q1: I pay tax because the risk of being checked is too high.	Q2: I feel that I am forced to pay tax.				
	1	2	3	4	5
1	51.9%	11.1%	0.0%	9.1%	35.7%
2	5.6%	44.4%	7.1%	27.3%	0.0%
3	7.4%	22.2%	28.6%	22.7%	0.0%
4	31.5%	22.2%	50.0%	31.8%	28.6%
5	3.7%	0.0%	14.3%	9.1%	35.7%

Source: Own research

51.9 % taxpayers who strongly agree on the enforced Q2 also select strongly agree on the enforced Q1 (Table 8).



## Norms and Voluntary Compliance

For the relationship of norms and voluntary compliance, two statements are selected. Those are: “People in my environment would strongly disapprove if I would not meet my tax obligations (N<sub>1</sub>)” and “I feel a sense of pride in being a member of the Turkish community (N<sub>2</sub>)”.

Table 9: Frequency Test for the Relationship of N<sub>1</sub> and Voluntary Q<sub>1</sub> / Q<sub>2</sub>

Voluntary Social norm	Q <sub>1</sub> I pay my tax as a matter of course						Q <sub>2</sub> I would also pay my tax if there were no controls					
		1	2	3	4	5		1	2	3	4	5
People in my environment would strongly disapprove if I would not meet my tax obligations. (N <sub>1</sub> )	1	15.7%	5.6%	6.5%	5.6%	1.9%	1	18.6%	2.7%	4.4%	4.4%	3.5%
	2	2.8%	0.9%	0.0%	1.9%	0.9%	2	2.7%	0.0%	1.8%	0.9%	0.9%
	3	5.6%	0.9%	0.9%	4.6%	0.0%	3	2.7%	2.7%	2.7%	3.5%	0.9%
	4	16.7%	0.9%	7.4%	2.8%	0.9%	4	11.5%	2.7%	3.5%	10.6%	1.8%
	5	10.2%	2.8%	0.0%	1.9%	2.8%	5	10.6%	0.9%	1.8%	1.8%	2.7%

Source: Own research

As the M<sup>2</sup> test for social norms on voluntary tax compliance shows 0.42 with p-value equals to 0.51; therefore the null hypothesis N<sub>1</sub> and Voluntary Q<sub>1</sub> are linearly independent cannot be rejected at the conventional level. The null hypothesis variables are independent. The statement that measures social norm is also tested for voluntary Q<sub>2</sub>. M<sup>2</sup> test founds as 0.35 with p-value equals to 0.55, the null hypothesis Q<sub>2</sub> and Voluntary Q<sub>2</sub> are independent cannot be rejected at the conventional level. The most of the data are concentrated on option 1 (strongly agree) reflecting the positive relationship.

Another test was performed for national norm and voluntary tax compliance. Results are presented in Table 10.

Table 10: Frequency Test for the Relationship of Q<sub>2.4</sub> and Voluntary Q<sub>1</sub>/Q<sub>2</sub>.

Voluntary National norm	Q <sub>1</sub> I pay my tax as a matter of course.						Q <sub>2</sub> I would also pay my tax if there were no controls.					
		1	2	3	4	5		1	2	3	4	5
I feel a sense of pride in being a member of the Turkish community (N <sub>2</sub> )	1	38.3%	4.7%	3.7%	5.6%	1.9%	1	33.0%	2.7%	4.5%	8.0%	3.6%
	2	3.7%	2.8%	0.9%	1.9%	0.0%	2	3.6%	1.8%	0.9%	3.6%	0.0%
	3	5.6%	0.9%	2.8%	2.8%	0.9%	3	3.6%	1.8%	5.4%	1.8%	1.8%
	4	1.9%	0.9%	6.5%	5.6%	0.9%	4	2.7%	2.7%	2.7%	7.1%	1.8%
	5	1.9%	0.9%	0.9%	0.9%	2.8%	5	2.7%	0.0%	0.9%	0.9%	2.7%

Source: Own research

The M<sup>2</sup> test is found as 2.13 with p-value equals to 0.000; therefore the null hypothesis Q<sub>2.4</sub> and Voluntary Q<sub>1</sub> can be rejected at the 5 percent significance level. Highest value as percentage is observed in strongly agrees reflecting the positive relationship. For voluntary Q<sub>2</sub>, The M<sup>2</sup> test is found as 1.72 with p-value equals to 0.000, so the null hypothesis Q<sub>2.4</sub> and Voluntary Q<sub>2</sub> are independent can be rejected at the conventional level.

## Trust and Voluntary Compliance

For the relationship of **trust** and **voluntary compliance**, we select two questions. The questions are: “*The Turkish Tax Office is reliable and trustworthy.*” (T<sub>1</sub>), “*How much trust do you have in parliament*” (T<sub>2</sub>).

**Table 11: Frequency Test for the Relationship of Q<sub>53</sub> and Voluntary Q<sub>1</sub>/ Q<sub>2</sub>**

Voluntary	Q <sub>1</sub> I pay my tax as a matter of course.						Q <sub>2</sub> I would also pay my tax if there were no controls.					
		1	2	3	4	5		1	2	3	4	5
The Turkish Tax Office is reliable and trustworthy (T <sub>1</sub> )	1	16.8%	1.9%	1.9%	0.0%	0.0%	1	12.6%	1.8%	1.8%	3.6%	0.0%
	2	6.5%	3.7%	0.0%	1.9%	0.0%	2	7.2%	1.8%	1.8%	0.0%	1.8%
	3	6.5%	1.9%	4.7%	4.7%	0.0%	3	5.4%	0.9%	7.2%	5.4%	0.0%
	4	14.0%	1.9%	6.5%	6.5%	0.9%	4	14.4%	2.7%	2.7%	7.2%	1.8%
	5	8.4%	1.9%	0.9%	2.8%	5.6%	5	7.2%	1.8%	0.9%	3.6%	6.3%

Source: Own research

The M<sup>2</sup> test is found as 13.44 with p-value equals to 0.000; therefore the null hypothesis T<sub>1</sub> and Voluntary Q<sub>1</sub> are linearly independent could not be rejected. The M<sup>2</sup> test is found as 6.18 with p-value equals to 0.012, so the null hypothesis so T and Voluntary Q<sub>2</sub> are independent could not be rejected.

**Table 12: Frequency Test for the Relationship of Q<sub>63.2</sub> and Voluntary Q<sub>1</sub>/Q<sub>2</sub>.**

Voluntary	Q <sub>1</sub> I pay my tax as a matter of course.						Q <sub>2</sub> I would also pay my tax if there were no controls.					
		1	2	3	4	5		1	2	3	4	5
How much trust do you have in parliament (T <sub>2</sub> ).	1	6.5%	0.0%	4.6%	3.7%	0.9%	1	7.1%	2.7%	0.0%	4.4%	0.9%
	2	3.7%	2.8%	0.9%	0.9%	0.0%	2	3.5%	1.8%	1.8%	0.9%	0.0%
	3	6.5%	4.6%	1.9%	0.0%	0.0%	3	7.1%	0.0%	1.8%	2.7%	0.9%
	4	15.7%	0.9%	3.7%	4.6%	0.0%	4	12.4%	2.7%	5.3%	5.3%	0.0%
	5	46%	11%	21%	10%	13%	5	15.0%	2.7%	5.3%	8.0%	8.0%

Source: Own research

The trust measurement for parliament is calculated as Likert-type scales. The M<sup>2</sup> test is found as 0.057 with p-value equals to 0.80 so the null hypothesis T<sub>2</sub> and Voluntary Q<sub>1</sub> are independent cannot be rejected at the conventional level. The M<sup>2</sup> test is found as 2.00 with p-value equals to 0.15, so the null hypothesis T<sub>2</sub> and Voluntary Q<sub>2</sub> are independent cannot be rejected.

## Gender and Tax Compliance

As presented in Table 14, the M<sup>2</sup> test is found as 0.074 with p-value equals to 0.78 so the null hypothesis gender and voluntary Q<sub>1</sub> are independent cannot be rejected. M<sup>2</sup> test is found as 0.059 with p-value equals to 0.80 so the null hypothesis gender and voluntary Q<sub>2</sub> are independent cannot be rejected. The M<sup>2</sup> test is found as 0.35 with p-value equals to 0.54 so the null hypothesis gender and enforced Q<sub>1</sub> are independent cannot be rejected. M<sup>2</sup> test is found as 0.77 with p-value equals to 0.37, so the null hypothesis gender and enforced Q<sub>2</sub> are independent can not be rejected.



Table 13: Frequency Test for the Relationship of Gender - Voluntary and Enforced Tax Compliance

Voluntary Q1: I pay my tax as a matter of course.						Voluntary Q2: I would also pay my tax if there were no controls.					
	1	2	3	4	5		1	2	3	4	5
Man	27%	6%	8%	7%	5%		23.7%	6.1%	7.9%	8.8%	7.0%
Woman	25%	5%	6%	9%	2%		21.9%	3.5%	6.1%	12.3%	2.6%
Enforced Q1: I pay tax because the risk of being checked is too high.						Enforced Q2: I feel that I am forced to pay tax.					
	1	2	3	4	5		1	2	3	4	5
Man	17.7%	6.2%	5.3%	16.8%	8.0%		23.9%	4.4%	7.1%	10.6%	8.0%
Woman	14.2%	6.2%	8.0%	15.9%	1.8%		23.9%	3.5%	5.3%	8.8%	4.4%

Source: Own research

### Education and Tax Compliance

The participants' educational degrees (Table 14) were categorized into five groups (no education(1), primary school or less(2), trade/secondary school(3), high school (4), and university(5).

Table 14: Frequency Test for the Relationship of Education - Voluntary and Enforced Tax Compliance

Voluntary Q1: I pay my tax as a matter of course.						Voluntary Q2: I would also pay my tax if there were no controls.					
	1	2	3	4	5		1	2	3	4	5
1	4.3%	0.0%	2.2%	0.0%	0.0%	1	4.0%	0.0%	1.0%	1.0%	0.0%
2	0.0%	0.0%	0.0%	0.0%	0.0%	2	0.0%	0.0%	0.0%	0.0%	0.0%
3	1.1%	0.0%	0.0%	0.0%	0.0%	3	1.0%	0.0%	0.0%	0.0%	0.0%
4	4.3%	2.2%	4.3%	6.5%	0.0%	4	5.9%	2.0%	3.0%	5.9%	0.0%
5	41.3%	8.7%	9.8%	10.9%	4.3%	5	32.7%	6.9%	7.9%	14.9%	8.9%
Enforced Q1: I pay tax because the risk of being checked is too high.						Enforced Q2: I feel that I am forced to pay tax.					
	1	2	3	4	5		1	2	3	4	5
1	1.0%	0.0%	0.0%	0.0%	0.0%	1	4.2%	0.0%	1.0%	1.0%	0.0%
2	0.0%	0.0%	0.0%	0.0%	0.0%	2	0.0%	0.0%	0.0%	0.0%	0.0%
3	1.0%	0.0%	0.0%	0.0%	0.0%	3	1.0%	0.0%	0.0%	0.0%	0.0%
4	5.2%	3.1%	2.1%	5.2%	2.1%	4	5.2%	2.1%	1.0%	7.3%	2.1%
5	20.8%	8.3%	8.3%	29.2%	8.3%	5	37.5%	6.3%	9.4%	12.5%	9.4%

Source: Own research

The  $M^2$  test is found as 0.63 with p-value equals to 0.42, so the null hypothesis education and voluntary Q<sub>1</sub> are independent could not be rejected.  $M^2$  test is found as 0.11 with p-value equals to 0.72, so the null hypothesis education and voluntary Q<sub>2</sub> are independent could not be rejected. The  $M^2$  test is found as 0.76 with p-value equals to 0.38 so the null hypothesis education and enforced Q<sub>1</sub> are independent could not be rejected.  $M^2$  test is found as 0.24 with p-value equals to 0.62 so the null hypothesis education and enforced Q<sub>2</sub> are independent could not be rejected.

## CONCLUSIONS

The aim of the present study was to test the relationship between norms (national and social), trust in authorities (such as Turkish Tax Office, parliament) and voluntary tax compliance. Lastly, relationship between gender and education with enforced and voluntary tax compliance on Turkish taxpayers were tested. The survey was conducted on an occasional sample. In the survey 118 Turkish taxpayers were randomly included. The sample size is limitation of the paper. The presented study is preliminary result of a research project. Therefore our sample size will be increased following our research proposal accepted.

Overall, the results of the  $M^2$  tests performed indicate that national norms and voluntary tax compliance are found as statistically significant dependent variables with a positive linear trend while for social norms, trust and other factors (gender, education) this could not be confirmed.

The findings of this study were partially consistent with the theoretical predictions concerning the relevance of norms for the deterring effects of legal sanctions against tax evasion. Norms indeed proved highly relevant for compliance processes, but the correlation was confirmed only for national norms. Like in many other studies on tax compliance behaviour (Bärbuțămîșu, 2011; Fjeldstad, 2004; Kirchler *et al.*, 2008; Kogler *et al.*, 2013; Braithwaite, 2003; James & Alley, 2002; Kogler *et al.*, 2013; Muehlbacher *et al.*, 2011; Tittle, 1980; Jackson and Milliron, 1986; Houston & Tran, 2001; Richardson, 2008; Kinsey & Grasmick, 1993) significant effects of social norms, trust, gender and education on tax compliance throughout the analyses were not found. There are also some limitations of this study which relies on self-reported measures of a topic, therefore respondents might be afraid of revealing their actual intention and behaviour (see Kirchler, 2007; Kirchler & Wahl, 2010) and generalization of the results. Further research should assess a larger number of Turkish taxpayers including more employers.



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# The Route of informatization to Promote Agricultural Modernization of Yunnan Province of China

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### *ABSTRACT*

Global economic integration and informationization brought opportunities and challenges for agricultural modernization. It is important for the agriculture, the society, the environment and the sustainable development to correctly understand the connotation and direction of agricultural modernization under the new situation, to efficiently take advantages of information technology, and to put forward scientific routes of informationization to promote agricultural modernization. This paper, based on analyzing the agricultural modernization and the current situation of informationization in Yunnan, China, and the challenges and difficulties under the new situation, points out that four ways of realizing informationization to promote agricultural modernization are to transform the market pattern and marketing mode of agricultural product, to support popularizing modern technology in agricultural produce and management, to build resource saving and environment friendly agriculture and to support the rural reform and social service modernization. This paper indicated that agricultural informationization and modernization needs to cooperatively develop. To realize agricultural informationization, four suggestions have been put forward: sustainable development mode should be adhered to; information service systems should be established by taking actual demands as driving power; information resources should be integrated from multi-source led by government and a pilot effect of the informationization characterized with agricultural industry and industrial chain should be highlighted.

*Key words:* **Yunnan China, Informationization, Agricultural Modernization, Routes**



## INTRODUCTION

Under the background of economic globalization and informationization, Chinese agriculture enters a new stage of development. Its agricultural modernization shows obvious stage characteristics. Since 1954, when agricultural modernization was put forward in the first China National People's Congress, its concept and connotation were enriched constantly. Agricultural modernization becomes a systematic concept closely associated with era, regional. Agricultural modernization experienced four stages in China (Mao and Kong, 2014). In the 1950's and 1960's, it put emphasis on the application of industrial technology. Scholars generally equated agricultural modernization to agricultural mechanization. In the 1970's and 1980's, with the reform in the economic system, the agricultural modernization was extended to the field of business management, and was understood as arming agriculture with modern science and industrial technology but managing agriculture with advanced economic management methods. In the 1990's, market economic system brought marketization and industrialization into the contents of agricultural modernization, together with the modernization of resources allocation and economy structure. In this century, with China joining WTO, the impact of economic globalization and information technology on Chinese agriculture rapidly deepen. The internationalization of market, intellectualization of agricultural management, safety of agricultural products, and protection to the ecological environment have become the important contents of agricultural modernization. In the process of agricultural modernization of China, machinery technology, biological technology, market economic system, management philosophy, and engineering technology had provided strong power successively.

To accelerate the agricultural modernization, Chinese government has been keeping on the policy guidance and support, such as the household contract responsibility system in the 1980's as well as the agricultural products market system and social service system in the 1990's. In this century, the government has issued polices one after another on urban-rural integration, training new farmers, establishing agricultural technology serving system, developing agricultural industrialization, land transferring, and so on. To 2015, the first document annual from central government has focused China agriculture for 12 consecutive years. Agriculture is developing rapidly.

Applying information technology in agriculture has got wide attention from Chinese government, academics and the whole society. In recent years, China has increased investment in the construction of information infrastructure, service system and software platform, the development of software system and new equipments, the integration and demonstration of information technology, and so on, which has produced great influences. In 2011, China's "Twelfth Five Year Plan" proposed to "synchronously improve the industrialization, urbanization and agricultural modernization". The government report of 2012 also put forward the strategy of "synchronous development in industrialization, informationization, urbanization and agricultural modernization" in the Eighteen National Congress (Hu, 2012). The informatization plays a more and more important role in the national economic and social development. Many domestic scholars have discussed the relationship between informatization and agricultural modernization. It has reached a consensus that information technology is an important technical mean. Some studies regard that the informatization has already integrated into the modern agricultural system as a key element of new productivity and hence become an important content and a carrier for the modern agricultural system (Cui and Feng, 2013). However, present informatization does not integrate enough with the agricultural modernization so that it could not provide sufficient impetus to the latter.



## INVESTIGATION AND ANALYSIS

Located in the southwest frontier of China, Yunnan is adjacent to Burma, Laos and Vietnam. 26 ethnic people are living here together, with their various ethical culture and customs. The Tropic of Cancer get across the land of Yunnan, results in different climate zones from tropic zone to temperate zone. The diversity of its climates, landforms and biological resources are very prominent. Yunnan's rural population is high up to 36,203,000, accounting for 80.2% of the total population. The gross agricultural production accounts for 26% of the total value. The economic development level in the rural areas and the whole agricultural production level are both not satisfied. Presently, there are still 6,610,000 impoverished people in rural areas, accounting for 23.7% of the total rural population in Yunnan province.

### ANALYSIS ON THE STATUS OF YUNNAN'S AGRICULTURAL MODERNIZATION

Yunnan's agricultural modernization possesses distinct characteristics and difficulties. Its agricultural production level is lag behind Chinese national average level, which is mainly related with its characteristics of environment, location, economy, and agriculture itself. Firstly, from the aspect of environment, plateau mountain area accounts for 94% of the province. Its topography is complex. The vertical climate change is very significant. It is not uncommon to see various small climates within a county's region, which even belongs to different climate zones. It brought many difficulties in agricultural standardization and large-scale farming. Secondly, located in the upstream areas of 6 rivers flowing through China and Southeast Asia, Yunnan has set up many nature protection areas with huge size. To protect the ecology, ecology biodiversity, and restore the environment is a necessary work demanded by China and the world, which is not so coordinated with the strategies of the high-invest and industrialization of agriculture so that the modern agricultural development is restricted. Third, the farmers' scientific and cultural qualities are relatively poor. People with education background above senior middle-school accounted for 14.2% of the population over 6-year-old, and 41.6% above junior high school. Fourth, the contribution rate of science and technology is not high for agriculture. The total power of using agricultural machinery to cultivate land was 4.2 kw/ha in 2013, which was far less than the national average level of 5.7 kw/ha (*Agriculture department of Yunnan province, 2013*). According to the above, the modernization of agriculture should take the specialties of agricultural and environment as well as the protection of ecological environment into consideration. It is also an important content to improve the quality of farmer in science and technology.

### ANALYSIS ON THE STATUS OF YUNNAN'S AGRICULTURAL INFORMATIZATION

According to "the global information technology report in 2012" from the world economic forum, if using the Networked Readiness Index, to show the national informatization levels of all nations, the mainland of China only ranks the 51. Yunnan's informatization even lags behind China's average level. The rural informatization in Yunnan province developed rapidly after 2000. Broadband network covered 44% administrative villages in the province in 2009. 3G network covered all towns and most administrative villages.

The rural informatization in Yunnan province lags far behind the developed areas. The service for agricultural modernization by informatization is obviously insufficient and showed many problems. Firstly, because of limit sci-tech knowledge, the farmers don't put emphasis on the agricultural information and can't use information technology well. Secondly, present agricultural





informatization mainly serves in the technology support and production management, lack of pre-planning before production and logistic service after production. Thirdly, the agricultural information service system is incomplete. Although 392 rural information service stations have been established, the promotion of information service is difficult to carry out because of the shortage of information workers and utility of software so that it is hard to produce actual effects. Fourthly, the agricultural information resources are too disperse and intermingled by the good and bad. The user can't distinguish the useful ones easily. Fifthly, the agricultural informatization is still dominated by government, with little social joined. At last, the support of informatization to the industry is far from enough. Only about 10% national agricultural industrialization leading enterprises of Yunnan can realize digital distribution and online trade online through their websites. Around 60% provincial agricultural leading enterprises established websites, but most of these websites are only used to introduce the enterprises and their products.

## DISCUSSION AND CONCLUSIONS

### THE ROUTE OF INFORMATIZATION TO PROMOTE AGRICULTURAL MODERNIZATION

#### *(1) To promote the transformation in market structure and managerial mode of Agriculture*

The market is the best internal impetus for agricultural modernization. Informatization possesses great potential in changing the market structure and the mode of agricultural operation. Through electronic commerce, information tracing, and data mining technology, many new sales models can be developed, such as the network sale mode, direct sales mode contacting producers with consumers, and intelligent sales mode letting the products choose consumers. Agricultural informatization should also promote the internationalization in the production and management of agriculture.

#### *(2) To promote the modernization of the agricultural production and management technologies*

The main form of applying information technology in agriculture is to spread modern technology of production and management through the information technologies. In the future, the service of information platform should be strengthened, Efforts should be done to improve the production automation, standardization, and industrialization. The integration of information resources and information technologies also should be enhanced, which includes the internet of things, cloud computing, mobile internet, and 3S. The precision agriculture and intelligent agricultural should get more focus.

#### *(3) To promote resource-saving and environment-friendly agriculture*

Resource conservation and environmental protection have early become important connotations of modern agriculture. Agricultural modernization should pay more attention to precision agriculture and ecological agriculture. Based on the environmental conditions and production requirements, information technology can be used in scientific planning, accurate management of production, improving the utilization rate of resources, and promoting the coordinated development of agriculture and environment protection.

#### *(4) To promote the modernization of rural affairs management and social service*





Rural informatization is also important, by which farmers can be trained to enhance the scientific and cultural quality of farmers. Farmers also can get more public service. Rural e-government is another important job, to improve rural affairs management efficiency, promote the openness of government information, and improve the level of democracy and legalization.

## SUGGESTION OF AGRICULTURAL INFORMATIZATION

Agricultural modernization and informatization of agriculture should be done cooperatively, not respectively. Anyone should guide another. According to the current situation and demands, this paper puts forward the suggestions of agriculture informatization. The first is to innovate the mechanism to keep agricultural informatization sustainable. By the way of market mechanism, the more social force should be encouraged to take part in agricultural information. Service should be distinguished from “public service” or “marketing services”. The second is to set an information service system driven by actual demands. Many problems have emerged in the process of agricultural informatization such as too much content, too high target, and excessive in formalism. The key content and the preferred direction should be determined firstly by actual demands. Then we need to plan as a whole and build a systemic system for information service. The system includes hardware, software, facilities, personnel, information resources, etc.. The third is to integrate information resources lead by the government. Institutions involved in agriculture is so much, and each of them accumulated rich information, facilities, human resources and other resources. These resources were scattered, and used not enough. Some were collected many times. The government should organized related institutions to integrate information resources, and share it to public with a unified platform. The fourth is to highlight the informatization in special industries and industry chains. Higher investment and later effect are important obstacles in agricultural informatization, so special industries with higher output should be supported prior through agricultural enterprises. This way will relieve the economic pressure. Informatization for agricultural industrial chain also should be emphasized. Beside production, the management, logistics, processing, sales, and other links need to be serviced by information, so that the maximum benefits from informatization would centralize as soon as possible. It will help to expand the demonstration effect.



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# Fairness, Discrimination and Personal Benefits Shape the Attitude to the Ethics of Tax Evasion in Slovenia

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## *ABSTRACT*

The paper theoretically and empirically addresses the problem of tax evasion in Slovenia from the perspective of fairness, personal benefits and discrimination. The attitudes towards tax evasion of three different groups have been taken into account, namely students, entrepreneurs and medicine doctors. It was speculated, that this three groups have the different views on tax evasion problematic, since they have different educational backgrounds, they are in the different stage of their career and also have different educational levels.

*Keywords: Tax evasion, Slovenia, fairness, discrimination, personal benefits.*

## INTRODUCTION

Many researchers have argued that tax ethics can help explain the high degree of tax compliance (for an overview see Torgler, 2007), since tax ethics measures not individual behavior but individual attitude and can be defined as a moral obligation to pay taxes, a belief in contributing to society by paying taxes (Torgler & Schneider, 2007).

There is little known about general tendencies of the ethics of tax evasion in Slovenia (Blažič & Klun, 2005; Belak and Hauptman, 2011; Hauptman & Matajič, 2012; Hauptman *et al.*, 2014; Hauptman 2015; Potočan & Nedelko 2014; Lešnik *et al.*, 2014). But it is a fact, that the share of shadow economy in a country is compared to the EU-27 average (Visa Europe & Schneider, 2013) much higher; therefore Slovenia should investigate tax factors that shape the attitude to the ethics of tax evasion and unveil strategies for fighting the shadow economy, with a particular focus on improving voluntary tax compliance.

This paper contributes to the literature of the ethics of tax evasion, which still lacks empirical evidence in Slovenia. Furthermore, it will be shown among other results that there are significant differences between medicine doctors, entrepreneurs and students in evaluating tax factors dimension (such as fairness, discrimination, personal benefits) of tax evasion. Before considering the findings in detail, however Section II of the paper presents theoretical background and literature review on tax factors (fairness, discrimination, personal benefits). Section III introduces the methodology of research and research results. In section IV concluding remarks are presented.

## THEORETICAL BACKGROUND AND LITERATURE REVIEW

### FAIRNESS (JUSTICE) THEORIES

One of the main principles of the taxation system is fairness (equity, justice) which has been considered for long time irrelevant for economic analysis (Torgler, 2003). There is limited literature that observes how taxpayers evaluate a fair tax system. The literature (Che Azmi *et al* 2008) found it difficult to define because it is multidimensional, it can be defined at the individual level or for society at large, fairness is intertwined with complexity, and a lack of fairness may be perceived justification or a cause of noncompliance. However, tax compliance literature has demonstrated that taxpayer's perception of fairness has an impact on the willingness to pay taxes (Torgler, 2003) and different aspects/theories/dimensions of fairness/justice have been discussed by many authors.

Equity theory of tax fairness (in Mukasa 2008) posits that people normatively expect a comparable rate of inputs and outcomes across all parties to an exchange and will be motivated to alter the distribution if a comparable rate is not perceived to exist (in Mukasa 2008). Theory deals with two issues (in Mukasa 2008): what is perceived to be equitable (a relationship is defined as equitable when all participants receive equal relative gains from the relationship, which represents the difference between the participants' contribution to and rewards from the relationship), and how people act upon this perception of equity (deals with the consequences of equity perception). Criticism has been directed toward the assumptions and practical application of equity



theory. Researchers have therefore offered numerous magnifying and competing perspectives such as *equity sensitivity constructs*, *fairness model*, *equity theory* and *game theory*.

Fairness heuristic theory (in Mukasa 2008) suggests that people use procedural and distributive fairness as a heuristic substitute in their assessment of trustworthiness of an authority, resulting in a significant interactive effect of fairness and outcome favorability on cooperation. It considers how different types of fairness combine to impact perceptions and behaviors (Farrar 2013; Lind 2001) and suggests that people are more likely to intend to comply with authorities if they perceive that they have been fairly treated (in Farrar 2013; Lind 2001; Tyler & Smith 1997; Tyler & Lind 1992), even in the face of adverse outcomes. Empirical evidence has shown that both procedural and distributive factors are critical to justice judgments (in Mukasa 2008; Lind 2001; Tyler 1994), and in fact are substitutable (in Mukasa 2008).

The Integrated Model of Perceived Unfairness (in Farrar & Thorne 2013; Rutte & Messick 1995) grounded in referent cognitions theory (Folger 1986), specifically considers the moderating role of fairness on behavior when individuals experience adverse (unfavorable) outcomes (in Farrar & Thorne 2013). Combined effect of outcome favorability and fairness on tax compliance are integrated in Rutte and Messick's (1995; in Farrar & Thorne 2013) "Integrated Model of Perceived Unfairness". The Model of Perceived Unfairness suggests that negative reactions to a resource allocation decision occur when two conditions are met (in Farrar & Thorne 2013; Folger 1986): 1) outcomes are worse than anticipated and 2) individuals are perceived to be unfairly treated. The Model of Perceived Unfairness posits that perceptions of unfairness lead to negative behaviours, including non-cooperation.

## TAX FAIRNESS DIMENSIONS

Gerbing (1988; in Mukasa 2008) developed a survey instrument which was designed to supply structure to the operational definition of tax fairness by identifying the various dimensions of tax fairness.

According to Richardson (2006; in Mukasa 2008), five major underlying **tax fairness dimensions** were identified: *general fairness and distribution of tax burden*, *exchange with government*, *attitude towards taxation of the wealthy*, *preferred tax rate structure and self-interest*. General fairness and distribution of the tax burden seeks to explain the overall fairness of the tax system and the distribution of the tax burden. Exchange with government deals with the benefits received from government in exchange for the income taxes paid. In the context of the income taxation, individuals may focus on evaluating the fairness of tax burdens in terms of the amount of taxes they pay relative to benefits they receive from government (Mukasa 2008). If society does not offer enough (tax funded) resources compared to the amount of tax one must pay, this may lead to feelings of exchange inequity (Mukasa 2008). Taxpayers may not agree with the government's spending policies, or if they perceive that they are not obtaining a fair exchange from the government for their tax payments, then they are distressed, and report less income than taxpayers who perceive equity in their exchange with the government (Mukasa 2008). Attitudes towards taxation of the wealthy deals with wealthy taxpayers not paying their fair share of income taxes and the existence of special provisions and deductions that are only available to the rich. Preferred tax rate structure deals with the favored tax rate structure (i.e. progressive tax rate structure vs. flat/proportional tax rate structure). The fairness of alternative tax rate structures can be viewed from at least three perspectives. First, there is the belief that higher-income taxpayers should have higher tax liabilities than lower-income taxpayers, *ceteris paribus*. Second, there is the effect of tax rates on a given person's tax liability as his or her income increases or decreases. Third, there is the perspective of self vis-a-vis others. Self-interest deals with the amount of tax the individual personally pays is too high generally and in comparison with others. Self-interest assumes that individuals maximize their expected utility by reporting on income that balances the benefits of successful evasion against the consequences of detection (Roth, Scholz & Witten, 1989; in Mukasa 2008). Additionally, Richardson (2006; in Mukasa 2008) and Giligan & Richardson (2005; in Mukasa 2008) identified a sixth tax fairness dimension which is middle income earners.



## TYPES OF FAIRNESS

The OECD (2010) distinguishes between three types of fairness in taxation: **distributive fairness** (the perception that government acts as a wise spender of tax revenues); **procedural fairness** (the perception that the tax administration adheres to procedures that are fair in dealing with taxpayers); and **retributive fairness** (the perception that the tax administration is fair in applying punishments when the rules are broken). While procedural and retributive fairness can be influenced by tax administrations, distributive fairness depends on policymakers (Hauptman *et al.* 2014). Wenzel (2003) discusses various types of fairness in the context of tax behavior. Summary descriptions are presented in Table 1 (Hofmann *et al.* 2008).

*Table 1: Distributive justice, procedural justice and retributive justice by individual, group and societal level*

LEVEL OF ANALYSIS IN TAX RESEARCH	SOCIETAL LEVEL	GROUP LEVEL	INDIVIDUAL LEVEL
<b>DISTRIBUTIVE JUSTICE</b>			
Tax burdens	tax level; distribution; progressivity	in-group's tax burden; compared to other groups; other times; its relative income	personal tax burden; compared to others; other times; one's relative income
Tax based benefits	level of spending; efficiency; distribution over different policies	in-group's benefits; compared to other groups; other times; its relative income	personal benefits compared to others; other times; one's relative taxes
Avoidance/evasion opportunities	level; distribution of opportunities	in-group's options relative to other groups	personal options compared to others; other times
<b>PROCEDURAL JUSTICE</b>			
Interactional treatment	rights for taxpayers and service standards	respect for the in-group; consistency relative to other groups	respect for the individual; consistency relative to other individuals
Process and decision control	consultation of taxpayers in general; democratic structures	voice; control, consultation and representation of in-group	voice; control; consultation of individual
Information and explanation	transparency; presentation in media	explanation and justifications for decisions affecting the in-group	explanations and justifications for decisions affecting the individual
Compliance costs	administration and compliance costs; complexity of the tax system	efficiency; service versus costs for the group	efficiency; service versus costs for the individual
<b>RETRIBUTIVE JUSTICE</b>			
Penalties	severity of penalties; distribution penalties for different offences; quality of penalties	appropriateness of penalty for in-group (relative to the offence, others)	appropriateness of penalty for individual (relative to the offence, others)
Audits	rigidity or inconsiderateness of audits in general	rigidity or inconsiderateness of audit for in-group case	rigidity or inconsiderateness of audit for individual case

(Wenzel, 2003; in Hofmann *et al.* 2008).

*Distributive justice* concerns a fair exchange of resources, benefits and costs, and is distinguished into **horizontal, vertical and exchange fairness** (Kirchler, 2007). Horizontal fairness is related to a fair distribution of benefits and costs within one's income group. Vertical fairness is related to the distribution of benefits and costs across income groups, while exchange fairness is related to taxpayer's tax burden and the provision of public goods by the government. Research on horizontal fairness showed that citizens who feel treated disadvantageously compared to other taxpayers are more likely to evade taxes (e.g., Spicer & Becker, 1980;





in Kirchler, 2007). Citizens who feel that vertical fairness between groups (e.g., rich versus poor people) does not exist tend to evade taxes more than citizens who perceive high vertical fairness (in Hofmann *et al.* 2008; Kinsey & Grasmick, 1993; Roberts & Hite, 1994). Tax evasion is also related to taxpayers' dissatisfaction with the provision of public goods by the government (in Hofmann *et al.* 2008; Spicer & Lundstedt, 1976; see also Alm, Jackson & McKee, 1993; Porcano, 1988; Pommerehne & Frey, 1992).

*Procedural justice* concerns the process of resource distribution. It was found that procedural justice is high when individuals perceive the rules applied for the distribution of benefits and costs as fair, and treatment by tax authorities as friendly, respectful and supportive (Leventhal, 1980; in Hofmann *et al.* 2008). In line with this, if tax law favored particular income groups relative to others, procedural fairness was perceived as low (Murphy, 2003; in Hofmann *et al.* 2008). Fairness perceptions are enhanced by the provision of information on tax law (Wartick, 1994; in Hofmann *et al.* 2008), as well as by participation in the development of tax law and in decisions on the use of tax revenues (Torgler, 2005; in Hofmann *et al.* 2008). Fair treatment of taxpayers and a culture of mutual understanding between tax authorities and taxpayers improve trust in authorities (Job & Reinhart, 2003; Tyler, 2001; Wenzel, 2006; in Hofmann *et al.* 2008). It was shown that if tax authorities are perceived as supportive, tax compliance increases (Kirchler, Niemirowski & Wearing, 2006; in Hofmann *et al.* 2008).

*Retributive justice* concerns the perceived fairness of norm-keeping measures, e.g., audit and punishment. Concerning tax behavior, empirical results reveal that high retributive justice prevails when taxpayers agree with governmental tax audits and penalties for tax evasion. Inconsiderate audits and unfair penalties lead to negative attitudes towards tax authorities (Spicer & Lundstedt, 1976; in Hofmann *et al.* 2008). However, universal rules for fairness of penalties are difficult because people take the causes for tax evasion into account when deciding on punishments (Kaplan, Reckers & Reynolds, 1986; in Hofmann *et al.* 2008). Policies and measures used by tax authorities for fiscal reasons can turn out to be detrimental to perceived retributive justice. A highly disputed measure, for example, is tax amnesty. Tax amnesties allow tax evaders to retroactively file their taxes without being punished, leading to higher tax revenue. However, tax amnesties can have negative effects on the compliance of honest taxpayers who feel materially disadvantaged (Hasseldine, 1998; Sausgruber & Winner, 2004; in Hofmann *et al.* 2008).

## PERSONAL BENEFITS

People are willing to pay tax because of the 'social contract' that exists between them and their governments (Aye, 2007). Alm (2013) used experiments to test this idea. He found that there is a greater willingness to comply, when participants perceive that they will receive benefits from a public good funded by the taxes collected since the individuals do not always behave as the selfish, rational, self-interested individuals portrayed in the standard neoclassical paradigm, but rather are often motivated by many other factors that have as their main foundation some aspects of ethics (Alm 2013).

Taxpayers are also sensitive about the ways in which the government uses their taxes (Anyongyeire 2011). As Anyongyeire (2011) points out individuals might feel cheated if taxes are not spent efficiently and tax compliance is influenced by the benefits received from the government in form of public goods compared to the price (e.g. the taxes) that they pay for them. The relationship with the state is pursued not only as a relationship of coercion but also as one of exchange (Torgler 2006; in Anyongyeire 2011). Therefore, individuals will feel cheated if taxes are not spent efficiently. They are more inclined to comply with the law if the exchange between the paid tax and the performed government services are found to be equitable.

However, a collectivist-oriented and/or egalitarian individual, in contrast, will be more willing to pay taxes even if her tax burdens exceed her individual benefits (i.e., no material fiscal exchange equity) if the taxes help the group (in Anyongyeire, 2011; Bardsley, 2005). Moreover, this person might consider the reduction of inequality and the provision of goods to others a benefit when determining whether there is fiscal equity. He or she will see paying taxes as a gain, fulfilling personal desires and civic obligations and not just a loss of personal income.

## DISCRIMINATION

States may be accused of “*tax discrimination*” when they tax outsiders differently from insiders, and from legal point of view, where “*insiders*” refers to nationals and resident individuals and companies (Mason & Knoll, 2012; Huhg & Brian, 2004). Therefore, prohibitions of tax discrimination have long appeared in constitutions, tax treaties, trade treaties, and other sources, but despite their ubiquity, little agreement exists as to how such provisions should be interpreted (Mason & Knoll, 2012). Since everyone should be treated fairly without any discrimination or misconception, OECD (2010) recommends that the tax systems should minimize discrimination in favor of or against any particular economic choices, which in practice means building tax systems substantially around broad income and expenditure bases and minimizing differences in tax rates that can be applied to different bases.

Arguments based on human rights issues, where the government discriminates on the basis of religion, race or ethnic background and where the government imprisons people for their political beliefs, were as strongest reasons to support tax evasion on ethical grounds defined by McGee and Gupta (2008).

## RELIGION

McGee and Gupta (2008) identified two human rights arguments that were not discussed in the Crowe (1944) thesis. Crowe (1944; in McGee & Gupta 2008) summarized 500 years of mostly Catholic literature on the topic. That literature included a number of arguments to justify tax evasion in certain cases, such as when the king or other government is corrupt or evil, when the tax system is unfair, when there is inability to pay or when the tax funds are used to support an unjust war (McGee & Gupta 2008).

Based on that research several other studies have been done from various religious perspectives (Cohn, 1998; DeMerville, 1998; McGee, 1998d, 1999; Smith & Kimball, 1998; Tamari, 1998). McGee and Gupta (2008) identified that literature. Cohn (1998) and Tamari (1998) described the Jewish literature on tax evasion and on ethics in general. Christian viewpoints was presented by Gronbacher (1998), Schansberg (1998), Pennock (1998), Smith and Kimball (1998), McGee (1994, 1998c, 1999a, 2004). Muslim perspective was addressed by Murtuza and Ghazanfar (1998). Islamic business ethics literature was presented by McGee (1997). DeMerville (1998) discusses the Baha'i perspective. While some authors found some valid arguments to justify tax evasion on moral grounds at times from religious perspectives, other concluded that tax evasion is never justified.

## ETHNICITY

Research has begun to examine also the moderating impact of ethnicity on the tax compliance behavior (Blanchard et al. 2003, 2008). Some cross-cultural study demonstrates that regardless of the differences between the countries under study (in relation to ethnicities), taxpayers generally respond in quite similar ways, when it comes to meeting their tax obligations. A literature review by Birch, Peters and Sawyer (2003) which used an ethnicity variable found that acceptance for tax evasion behaviour is significantly higher for respondents of New Zealand European ethnicity relative to other ethnicities. Ethnicity was considered to be one of the determinants in a study by Chan, Troutman, and O'Bryan (2000). Chan *et al.* (2000) explored the similarities and differences in taxpayer compliance behavior between Chinese taxpayers in the US and Hong Kong (in Kasipillai & Jabbar 2003). Shafer and Park (1999; in Kasipillai & Jabbar 2003) in investigating cultural differences in ethical decision making among Asians, Caucasians and Hispanic students in the US found significant difference between ethical judgment among Asian and Caucasian students. Sendut (1991; in Kasipillai & Jabbar 2003) explains that the effect of race (ethnicity) possibly is significant in a multicultural society where each ethnic group prefer to maintain their ethnic identity.



## EMPIRICAL RESEARCH

In the empirical part, the attitudes towards tax evasion of three different groups have been taken into account, namely students, entrepreneurs and medicine doctors. It was speculated, that this three groups have different views on tax evasion problematic, since they have different educational backgrounds, they are in the different stage of their career and have different educational levels. The medicine doctors were selected, since they are public services employees, and therefore can have different views and attitudes towards taxes and tax fraud in comparison with other groups, specially the private sector. They also represent higher middle or higher social group of population. Entrepreneurs were included, since they are the one who are mainly building or acquiring new businesses. During this and later processes they usually tend to lower taxes, and therefore can differ in their opinions regarding the tax fraud, specially comparing to public servants. Students represent younger population and are usually not so much concerned and educated about the tax problematic. However, since studying in Slovenia is mainly free of charge, they could be affected when tax fraud problematic arises.

Therefore, we tested following hypotheses:

- H1: There are significant differences between medicine doctors, entrepreneurs and students in evaluating the personal benefit dimension of tax evasion.
- H2: There are significant differences between medicine doctors, entrepreneurs and students in evaluating in evaluating the discrimination dimension of tax evasion.
- H3: There are significant differences between medicine doctors, entrepreneurs and students in evaluating in evaluating the fairness dimension of tax evasion.

## METHODOLOGY

### Measurement instrument

A closed structured survey questionnaire was used to measure the concepts. The items for this study were adopted from McGee (2005). The questionnaire consisted of 18 statements covering the three main viewpoints of the ethics of tax evasion. The measurement scale used was a 5 point Likert scale and respondents were asked to indicate their agreement or disagreement with each of the statement. Since the data were collected on Slovenian sample and the original measurement instrument was in English language the questionnaire was translated using the back-translation process, where the instrument was first translated into Slovene and then back into English. Since content validity was already established in previous studies (e.g. McGee, 2005; McGee and Gou, 2006), the translated instrument was only tested on a test sample for possible misunderstandings or redundancy. Respondents in the test sample claimed that they find it hard to decide between seven categories; therefore in the final sample the 5 point Likert scale was used.

### Sample

For the purpose of testing the hypotheses the data was collected whit the quota sample, where doctors, entrepreneurs and students represented the three quotas. Respondents to a study were selected randomly and by personal contact. The final sample consisted of 100 medicine doctors, 100 entrepreneurs and 131 students. 55,1 % of males and 44,9% of females were included in the sample. Concerning the respondents age, 40 % were younger than 25 years, 19,9 % were aged between 26 and 35 years, 18,4 % between 36



and 45 years, 17,2 % between 46 and 55 years, and only 4,5 % were older than 56 years. Such age distribution is not representative for Slovenia. It mainly mirrors the selection of the respondents (students) in our sample.

3,6% of the respondents acquired primary education, 48,5 % secondary education, 46,7 % higher education (college or university), and 1,2 % did not provide the answer regarding their education. Further, concerning the respondents monthly income, the majority (23,2 %) indicated that it was more than 2.000 EUR. This percentage was quite a high, but logical, since the medicine doctors represented 30 % of respondents in the sample. 13,9 % reported that their income was lower than 500 EUR, 20,2 % that it was between 501 and 1.000 EUR, and 19,3 % did not have the monthly income at the time. Additional 8,4 % of respondents did not want to provide an answer regarding their monthly income.

### **Dimensionality, construct validity, and reliability**

Dimensionality, construct validity, and reliability of the measurement instrument was assessed with the exploratory factor analysis (EFA), using the principal component analysis. In the process of EFA some of the items were eliminated, due to following reasons: (a) low communalities ( $< 0,4$ ), (b) low loadings ( $< 0,6$ ), or (c) cross loadings on multiple factors ( $> 0,4$ ). In the final solution 4 items were eliminated, namely: "Tax evasion is ethical if a large portion of the money collected is spent on projects that I morally disapprove of.", "Tax evasion is ethical if the probability of getting caught is low.", "Tax evasion is ethical if some of the proceeds go to support a war that I consider to be unjust.", and "Tax evasion is ethical if I can't afford to pay."

Kaiser-Meyer-Olkin measure of sampling adequacy for the final solution was 0,916, indicating that the degree of inter-correlations among variables that entered the EFA was appropriate, also Bartlett's Test of Sphericity was significant at  $p < 0,001$ . According to Eigenvalues three factors were extracted with the Eigenvalues higher than 1. 71,328 % of variance of all variables (items) was explained with three factors. With the majority of the variance of items explained we moved forward towards the rotated component matrix explanation, for which Varimax method was applied. Rotated components matrix with single items, their means, standard deviations, and loadings is presented in Table 1.

As can be seen from Table 1 all loadings on single factors are higher than 0,6 meaning that convergent validity of the construct was achieved. Also all Cronbach alphas for the constructs reached the values of 0,8 or more, meaning that the constructs were internally consistent. First factor consists of seven items, second of three items and third of four items. Items constituting single factors can be observed in table 1. According to the theory first factor was named personal benefits second discrimination, and third fairness.



*Table 2:* Rotated components matrix with the items, their means, standard deviations, loadings and construct reliabilities

	Means	Stan. Dev.	Factor loadings			Reliabilities
			1	2	3	
Tax evasion is ethical even if most of the money collected is spent wisely.	4,03	1,119	0,848			0,903
Tax evasion is ethical even if a large portion of the money collected is spent on projects that do benefit me.	4,04	1,036	0,833			
Tax evasion is ethical even if a large portion of the money collected is spent on worthy projects.	3,96	1,105	0,833			
Tax evasion is ethical even if tax rates are not too high.	4,19	1,008	0,699			
Tax evasion is ethical if a large portion of the money collected is spent on projects that do not benefit me.	4,10	1,022	0,662			
Tax evasion is ethical even if it means that if I pay less, others will have to pay more.	4,21	,952	0,622			
Tax evasion is ethical if everyone is doing it.	4,04	1,054	0,613			
Tax evasion would be ethical if I were a Jew living in Nazi Germany in 1935-1945	3,65	1,414		0,862		0,890
Tax evasion is ethical if the government discriminates against me because of my religion, race or ethnic background.	3,47	1,504		0,830		
Tax evasion is ethical if the government imprisons people for their political opinions.	3,27	1,494		0,786		
Tax evasion is ethical if a large portion of the money collected is wasted.	3,87	1,214			0,753	0,826
Tax evasion is ethical if tax rates are too high.	3,90	1,169			0,740	
Tax evasion is ethical if the tax system is unfair.	3,48	1,372			0,722	
Tax evasion is ethical if a significant portion of the money collected winds up in the pockets of corrupt politicians or their families and friends	3,80	1,416			0,657	

Own research.

## RESULTS

According to mean values in Table 2 the respondent's scores are higher for personal benefits dimension, and lower for the following two dimensions. The strongest argument for justifying tax evasion occurs even if other people pay more taxes and even if tax rates are not too high. The lowest scores, and therefore the weakest argument for justifying tax evasion were observed in cases of race, ethnic or religion discrimination.

In order to test the proposed hypotheses, items were recalculated into three construct using the factor scores regression method. With this method three new variables were obtained. One-way ANOVA was used for testing for differences between the groups of students, entrepreneurs, and medicine doctors. Also Bonferroni post-hoc tests were applied. In the first phase every single item was tested and in the second phase the same test was applied for the constructs obtained from the factor scores.

For the majority of items except for five there were no statistically significant differences observed between three groups (medicine doctors, entrepreneurs, and students) at  $p < 0,05$ . Statistically significant differences were observed for the following items:

- “Tax evasion is ethical if a significant portion of the money collected winds up in the pockets of corrupt politicians or their families and friends” (medicine doctors reported lower scores and therefore less agreement with the statement ( $M=3,48$ ) than students ( $M=3,94$ ) and entrepreneurs ( $M=3,94$ )).
- “Tax evasion is ethical even if it means that if I pay less, others will have to pay more” (medicine doctors reported lower scores ( $M=3,93$ ) than students ( $4,40$ ) and entrepreneurs ( $M=4,25$ )).
- “Tax evasion would be ethical if I were a Jew living in Nazi Germany in 1935-1945” (medicine doctors reported lower scores ( $M=2,97$ ) than students ( $4,02$ ) and entrepreneurs ( $M=3,68$ )).
- “Tax evasion is ethical if the government discriminates against me because of my religion, race or ethnic background” (medicine doctors reported lower scores ( $M=2,80$ ) than students ( $3,73$ ) and entrepreneurs ( $M=3,81$ )).
- “Tax evasion is ethical if the government imprisons people for their political opinions” (medicine doctors reported lower scores ( $M=2,68$ ) than students ( $3,42$ ) and entrepreneurs ( $M=3,64$ )).





*Table 3:* One-way ANOVA for testing the differences between the groups of medicine doctors, entrepreneur, and students.

		N	Means (standardized values)	Std. Deviations	F values	Statistical Significance
Personal benefits	Medicine doctors	100	0,038	0,936	0,147	0,864
	Entrepreneurs	100	-0,003	0,923		
	Students	131	-0,034	1,104		
	Total	331	-0,003	1,000		
Discrimination	Medicine doctors	100	-0,557	1,153	25,781	0,000
	Entrepreneurs	100	0,217	0,891		
	Students	131	0,265	0,762		
	Total	331	0,002	1,001		
Fairness	Medicine doctors	100	0,046	0,833	0,211	0,810
	Entrepreneurs	100	-0,002	1,055		
	Students	131	-0,041	1,078		
	Total	331	-0,003	1,000		

Own research.

One-way ANOVA for testing the differences between three researched groups for three constructs, namely personal benefits, discrimination, and fairness, is presented in Table 2. Differences between single groups were once again evaluated with the Bonferroni post-hoc tests. Statistically significant differences ( $F=25,871$ ;  $p<0,01$ ) occur only for the discrimination dimension. Similarly as for the single constructs, medicine doctors differ from other two groups, since they reported significantly lower scores than entrepreneurs and students).

According to the presented results  $H_1$  (There are significant differences between medicine doctors, entrepreneurs and students in evaluating in evaluating the personal benefit dimension of tax evasion) and  $H_3$  (There are significant differences between medicine doctors, entrepreneurs and students in evaluating in evaluating the fairness dimension of tax evasion) were rejected.  $H_2$  (There are significant differences between medicine doctors, entrepreneurs and students in evaluating in evaluating the discrimination dimension of tax evasion) on the other hand was supported.

## CONCLUSIONS

In the present paper we have theoretically and empirically addressed the problem of tax evasion in Slovenia from the perspective of fairness, personal benefits and discrimination. The attitudes towards tax evasion of three different groups have been taken into account, namely students' entrepreneurs and medicine doctors. It was speculated, that this three groups have the different views on tax evasion problematic, since they have different educational backgrounds, they are in the different stage of their career and also have different educational levels.



What we can observe from the research results is that all three groups are more leaned towards the tax evasion in case of potential gathering of personal benefits and possible discrimination and fairness do not play such an important role in tax evasion in Slovenia. This means that the tax evasion will occur primarily even if other people pay more taxes and even if tax rates are not too high. From tax evasion people will primarily seek personal benefits. Second, we confirmed that in some categories the probability of tax evasion (e.g. political corruption, religious or race discrimination) is significantly lower for medicine doctors than for the students and entrepreneurs. This may be due to the fact that the large part of the wages of medicine doctors in Slovenia is financed by the state, since they are mainly civil servants and therefore understand that tax evasion can lower the state budget from which they are financed. Similarly, medicine doctors differ from other two groups concerning the discrimination dimension, since they reported significantly lower scores than entrepreneurs and students. Concerning the other two dimensions no significant differences could be supported.

The current contribution can serve as important information in understanding the causes of tax evasion in Slovenia and can help the policy makers not only in defining new activities but also in a sense of communication with the public. Important stage of development in the revenue bodies' struggle against tax evasion is the tendency to adopt co-operative compliance approaches<sup>1</sup> – engaging with taxpayers or other stakeholders to explore shared interests. Tax administration should continue to explore opportunities for working smarter in compliance (see OECD 2012; Hauptman et al. 2011; Potočan et al. 2012; Hauptman et al. 2014), by applying modern compliance risk management principles and strategies; shifting compliance activities upstream and addressing compliance risks earlier in the sequence of events potentially leading to compliance failures; and facilitating compliance through electronic services with continuous improvement of these services (see Mates et al. 2013).

In the following studies it would be interesting to further address the different demographic characteristics of tax payers in evaluating their acceptable reasons for tax evasions, such as age, social status, employment status, level of education etc.

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<sup>1</sup> See OECD (2013a).



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# Turnaround Marketing - Identifying Untapped Potential for Enhancement of Turnaround Concepts of SME in Austria and Germany

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## *ABSTRACT*

In order to return 'distressed' companies to an economically stable condition, a sound turnaround concept containing adequate turnaround measures has to be developed. For this purpose, it is not sufficient for responsible managers to focus on costs and retrenchment, but to adapt an attitude towards a more holistic approach including measures concerned with recovery and the sales side of the company. This paper analyses the significance of marketing with regard to turnaround success and turnaround concepts of SME in crisis situations in Austria and Germany. The results show that although certain marketing areas have considerable potential to contribute to turnaround success of 'distressed' SME in both countries they only play a subordinate role in turnaround concepts in practice. Accordingly, there is untapped potential to further incorporate marketing into turnaround concepts of SME to additionally contribute to turnaround success.

*Key words:* **marketing, turnaround marketing, turnaround success, turnaround concept, corporate crisis**



## INTRODUCTION

Regardless of the type of company, there is a considerable probability to be confronted with a more or less severe form of a corporate crisis at some point during the existence. (Kazozcu, 2011; O'Shaughnessy, 1986; Tikici et al., 2011) Companies in crisis situations can be enabled to return to an economically stable situation by application of appropriate turnaround measures (Pearce & Robbins, 1993; Pretorius, 2008), which are elaborated in form of turnaround concepts. However, due to the specific issues and challenges that arise in times of crisis and their significantly differing nature, when compared to improving the business performance of a company in a 'non-decline' situation, managers often find themselves in unaccustomed conditions once confronted with the need to perform a turnaround. (Finkin, 1985; Trahms et al., 2013; Schmitt & Raisch, 2013; O'Kane & Cunningham, 2012)

Although research indicates that marketing can positively contribute to overall company performance and sustained business success (Avlonitis & Gounaris, 1997; Day, 1994; Fritz, 1996; Fritz, 1997; Greenley, 1995; Hult & Ketchen, 2001; Langerak, 2003; Marks, 1992; McCole, 2004; Möller & Antilla, 1987), there is still limited attention on marketing in the context of corporate crisis and turnaround management in research (Dolan, 1992; Köppel, 1994).

However, in practice, related regulations such as the IDW (Institute of German Auditors) S6 guidelines, dealing with recommendations concerning the development of restructuring concepts, increasingly require - besides classical finance- and performance-related factors - a holistic market(ing)- and sales-related perspective on sustained competitiveness and profitability. (Buth & Hermanns, 2010; IDW, 2011) Additionally, marketing scholars such as Hooley (1990) have long argued to not only view marketing as a separated function, but rather as integral part of businesses. Others, such as Barson (2008), Loidl et al. (2010), and Lehr (2006) show continuous support for this by emphasising on the importance of customer retention, especially in times of corporate crisis.

The line between a 'healthy' and 'distressed' company both in business practice and research is hard to constitute and not universally defined, as pointed out by Pretorius (2009). For the purpose of this research, a corporate crisis is defined as state in which the functionality and stability of a company is adversely affected and its viability threatened to a certain extent. Companies in such an economic situation need to recover. Accordingly, turnaround success can be described as the positive result of different activities undertaken aimed at leading a 'distressed' company from said crisis into an existence that no longer adheres to the definition of a corporate crisis as introduced above.

## RESEARCH QUESTION AND METHOD

In this context, the question arises to what extent marketing can contribute to turnaround success and if it is sufficiently considered in turnaround concepts of SME in Austria and Germany.

The hypothesis to be tested is stated as follows: Marketing plays a more important role with regard to turnaround success than in turnaround concepts of SME in Austria and Germany.

To answer the research question and test the hypothesis, experts of financial institutions operating in the corporate customer segment (financing business) in Austria and Germany are inquired. More precisely, 20 Austrian and 38 German experts in leading positions such as head of corporate customer division or head of credit risk management and head of restructuring participated in





the inquiry. Those experts are considered appropriate because of their experience with both 'healthy' and 'distressed' companies in their daily business as well as with numerous turnaround attempts - both successful and failing ones. The unit of analysis are SME in Austria and Germany, defined as employing 249 persons at maximum.

Participating experts rated the importance of 6 functional areas with regard to corporate success and turnaround success on a scale from 1 (does not play any role at all) to 6 (plays a very important role). Furthermore, they were requested to make a distinction between companies focusing on production and those focusing on service, wherever applicable. This distinction was made to account for the differing characteristics, such as level of e.g. absorptive capacity, resource dependability, standardisation and sectorial flexibility of operation concerning existing and new products of production and service focused companies (Bhattacharya, 2013; Ettl & Rosenthal, 2011; Gebauer et al., 2010) that can potentially affect turnaround strategies and processes.

The collected data is statistically analysed and the results obtained are presented in the following. Since the data is mainly not normally distributed, a non-parametric U-test at the 5% significance level is used for the evaluation of differences between the two contexts (turnaround success and turnaround concepts).

## RESEARCH OBJECTIVE

The objective is to research marketing with regard to turnaround success and turnaround concepts. More precisely, this research seeks to examine the importance of six marketing areas under study in terms of turnaround success and turnaround concepts and identify significant differences between those two contexts.

## RESULTS AND IMPLICATIONS

In the following, the results of the comparison and statistical evaluation and derived practical implications are presented for each country (total and differentiated according to company type). The purpose of the comparison is to determine whether differences between the two contexts are statistically significant with regard to the pre-defined marketing areas in order to identify untapped potential in turnaround concepts.

Table 1 shows the statistical evaluation of the data from Austria, which reveals that according to experts marketing has considerable potential to contribute to turnaround success. When asked how important the 6 marketing areas under study can be for turnaround success (in a strategic or earnings crisis), experts assigned an average importance (mean) of 4.405. However, the role of marketing in turnaround concepts of 'distressed' companies is noticeably lower (mean: 3.288).

**Table 1: Ranking of marketing areas (according to importance in the context of turnaround success and turnaround concepts) in Austria**

Turnaround succes			Turnaround concepts		
Rank	Marketing area	Mean	Rank	Marketing area	Mean
1.	promotion	4.825	1.	price	4.500
2.	place	4.663	2.	place	4.000
3.	positioning & strategy	4.338	3.	product	3.375
4.	price	4.275	4.	positioning & strategy	2.925
5.	after-sales service	4.263	5.	promotion	2.825
6.	product	4.063	6.	after-sales service	2.100
	Ø	4.405		Ø	3.288

Analysing the individual marketing areas, the results reveal measures in the ‘promotion’-area (with a mean of 4.825) to have the highest potential to contribute to turnaround success, followed by ‘place’ (4.663) and ‘positioning & strategy’ (4.338). In practice, however, the focus in turnaround concepts of distressed companies is mainly on measures within the area ‘price’ (4.500), ‘place’ (4.000) and ‘product’ (3.375). Altogether, two of the most important marketing areas for turnaround success are amongst the three areas which are least prominent in turnaround concepts: ‘positioning & strategy’ (with a mean of 2.925) and ‘promotion’ (2.825). Only ‘place’ is of equal rank for turnaround success and turnaround concepts.

**Table 2: Ranking of marketing areas (according to importance in the context of turnaround success and turnaround concepts) Germany**

Turnaround succes			Turnaround concepts		
Rank	Marketing area	Mean	Rank	Marketing area	Mean
1.	promotion	4.934	1.	price	4.447
2.	positioning & strategy	4.513	2.	product	3.789
3.	place	4.500	3.	place	3.711
4.	after-sales service	4.434	4.	positioning & strategy	3.145
5.	price	4.303	5.	promotion	3.145
6.	product	4.237	6.	after-sales service	2.605
	Ø	4.487		Ø	3.474

The results in Germany as displayed in Table 2 are mostly in accordance with those from Austria. In both countries, ‘promotion’, ‘positioning & strategy’ and ‘place’ are amongst the three most important marketing areas in the context of turnaround success; ‘price’, ‘after-sales service’ and ‘product’ are amongst the least important ones. In turnaround concepts, the most strongly emphasised areas are ‘price’, ‘place’ and ‘product’, followed by ‘positioning & strategy’, ‘promotion’ and ‘after-sales service’. In sum, two of the most important marketing areas for turnaround success are amongst those three areas which are given the least emphasis in turnaround concepts: ‘positioning & strategy’ (with a mean of 2.925) and ‘promotion’ (2.825).



*Table 3: Comparison: turnaround success and turnaround concepts (Austria)*

Marketing Area (Variable)	Group *)	Mean	Median	Standard-deviation	Test for normal distribution (p-value)	Asymptotic Significance of U-Test**)
<b>positioning &amp; strategy</b>	0	4.338	4.750	1.3186	0.051	<b>0.001</b>
	1	2.925	2.750	1.1387	0.003	
<b>product</b>	0	4.063	4.000	1.0509	0.166	0.061
	1	3.375	3.250	1.0497	0.200	
<b>price</b>	0	4.275	4.350	1.1751	0.200	0.620
	1	4.500	4.500	0.9032	0.192	
<b>place</b>	0	4.663	5.000	1.0769	0.119	0.080
	1	4.000	3.750	1.1921	0.002	
<b>promotion</b>	0	4.825	5.000	1.0672	0.016	<b>0.000</b>
	1	2.825	2.500	1.2489	0.003	
<b>after-sales service</b>	0	4.263	4.500	0.9917	0.200	<b>0.000</b>
	1	2.100	2.000	0.9119	0.048	

\*) group 0: turnaround success | group 1: turnaround concepts

\*\*) values marked in bold show statistically significant differences at the 5% level

Table 3 shows the comparison of six marketing areas between turnaround success and turnaround concepts of SME in Austria. The U-test applied reveals statistically significant differences (at the 5% level) between the two contexts in three areas of marketing: 'positioning & strategy' (asymptotic significance of 0.001), 'promotion' (0.000) and 'after-sales service' (0.000). According to experts, although those areas can contribute to turnaround success, they play only a minor role in turnaround concepts of 'distressed' SME.

'Price' is the only area playing a more important role in turnaround concepts when compared to turnaround success, even though this difference is not statistically significant. This result is in accordance with statements of some experts who pointed out that in many cases, measures within the marketing area 'price' are amongst the first ones taken in turnaround situations. However, experts stressed that in order to successfully turn a company around, those measures should not be overemphasised. This is in accordance with Loidl et al. (2010) who state that price plays a critical role in crisis situations; it is usually not useful to mainly apply measures in the area 'price', especially not to reduce sales prices, a decision which can hardly be revised later on. They rather recommend actions referring to additional benefits and extended guarantee periods.

Table 4: Comparison: turnaround success and turnaround concepts (Germany)

Marketing Area (Variable)	Group *)	Mean	Median	Standard-deviation	Test for normal distribution (p-value)	Asymptotic Significance of U-Test**)
<b>positioning &amp; strategy</b>	0	4.513	5.000	0.973	0.000	<b>0.000</b>
	1	3.145	3.000	0.948	0.000	
<b>product</b>	0	4.237	4.000	1.069	0.000	<b>0.023</b>
	1	3.789	4.000	1.181	0.000	
<b>price</b>	0	4.303	4.000	0.994	0.000	0.267
	1	4.447	5.000	1.193	0.000	
<b>place</b>	0	4.500	5.000	1.013	0.000	<b>0.000</b>
	1	3.711	4.000	1.252	0.000	
<b>promotion</b>	0	4.934	5.000	1.075	0.000	<b>0.000</b>
	1	3.145	3.000	1.116	0.000	
<b>after-sales service</b>	0	4.434	4.500	1.112	0.000	<b>0.000</b>
	1	2.605	2.000	0.994	0.000	

\*) group 0: turnaround success | group 1: turnaround concepts

\*\*) values marked in bold show statistically significant differences at the 5% level

Besides the three marketing areas with significant differences (at the 5% level) identified in Austria, data collected in Germany additionally indicates 'product' (0.023) and place (0.000) to differ significantly between turnaround success and turnaround concepts. From the perspective of financial institutions, those areas can explicitly contribute to turnaround success; however, they play a subordinate role in turnaround concepts of 'distressed' SME in Germany. In accordance with the results from Austria, 'price' is the only weighted higher in turnaround concepts compared to turnaround success, even though this difference is not statistically significant.



*Table 5: Comparison: turnaround success and turnaround concepts in Austria and Germany (according to company type)*

Marketing Area (Variable)	Group (*)	Asymptotic Significance of U-Test**)			
		Production companies (Austria)	Production companies (Germany)	Service companies (Austria)	Service companies (Germany)
positioning & strategy	0	0.001	0.000	0.003	0.000
	1				
product	0	0.022	0.046	0.211	0.199
	1				
price	0	0.541	0.639	0.552	0.275
	1				
place	0	0.032	0.003	0.196	0.006
	1				
promotion	0	0.000	0.000	0.000	0.000
	1				
after-sales service	0	0.000	0.000	0.000	0.000
	1				

\*) group 0: turnaround success | group 1: turnaround concepts

\*\*) values marked in bold show statistically significant differences at the 5% level

Table 5 shows the comparison of marketing between turnaround success and turnaround concepts in both countries, differentiated according to company type. For companies focusing on production, the results from Austria and Germany reveal statistically significant differences in almost all areas; the only exception to this is 'price'. Analogous to the results obtained without differentiation according to company type, 'price' is the only area weighted higher in turnaround concepts than with regard to turnaround success. Those results indicate that for companies focusing on production, there is untapped potential for turnaround concepts in almost all marketing areas, with the only exception of 'price'.

For companies focusing on service (both in Austria and Germany), the results show statistically significant differences (at the 5% level) between the two contexts in the marketing-areas 'positioning & strategy' (asymptotic significance of 0.003), 'promotion' (0.000) as well as 'after-sales service' (0.000). Those areas tend to play a subordinate role in turnaround concepts when compared to their potential contribution to turnaround success. Only the areas 'price' and 'place' show slightly higher values for turnaround concepts compared to turnaround success; however, those differences are not statistically significant.

## CONCLUSION

The results of this research show that despite the subordinate role of marketing in turnaround research and the limited occurrence of marketing within the existing body of literature on the subject, there is a considerable gap between the potential of marketing with regard to turnaround success and its emphasis in turnaround concepts of 'distressed' SME in Austria and Germany.

The results in Austria are mostly in accordance with those from Germany. In both countries, out of the 6 areas under investigation, 'promotion', 'positioning & strategy' and 'place' are amongst the three most important marketing areas with regard to turnaround success; in contrast, in turnaround concepts, the most emphasised areas are 'price', 'place' and 'product'. Thus, two of the most important marketing areas for turnaround success are amongst the three areas which are least emphasised in turnaround concepts: 'positioning & strategy' and 'promotion'.

In Austria, statistically significant differences between turnaround success and turnaround concepts are identified in three marketing areas: 'positioning & strategy', 'promotion' and 'after-sales service'. Besides those areas, data collected in Germany additionally indicates 'product' and 'place' to differ significantly between those two contexts.

Accordingly, the results show that there is untapped potential to further integrate marketing in turnaround concepts to additionally contribute to turnaround success, especially concerning measures in the 'positioning & strategy', 'promotion' and 'after-sales service' category.



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# Different Methods of Website Evaluation in Tourism

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## *Summary*

Websites in tourism, or more precisely, websites of tourist boards, are one of the promotion channels whose aim is to attract new guests and retain the existing ones. However, these websites are not equally successful in converting their virtual visitors into real guests. In order to evaluate the websites effectiveness, different approaches and methods can be used. Therefore, the aim of this paper is to test three different evaluation methods and inspect their advantages and disadvantages on the example of the websites of Croatian tourist boards. The data were collected by a counting method, an automated method and by a survey method based on the user's judgment. This approach has enabled the gathering of various subjective and objective indicators needed for the evaluation and comparison of the analysed websites. The results were presented in terms of the quality of the available information, the accessibility of the websites, and the first impressions of the visitors. This has overall demonstrated the advantage of using a combination of the above methods in the evaluation of websites in tourism.

*Keywords: Website Evaluation, Tourism, Counting method, Automated method, User judgment method*

## INTRODUCTION

The role of the Internet in promoting all aspects of tourism has starkly increased during the past decade. For many countries and their regions, as well as the individual cities, there are tourist websites that provide the visitors with all the necessary information on the potential destinations. The construction of such websites is an important element for the marketing of these destinations (Horng & Tsai, 2010). When creating promotion messages of the tourist organizations, it should be taken into account that there are three billion Internet users in the world (International Telecommunication Union [ITU], 2014). This rapid increase in the number of users is often characterized as the emergence of the “New Economy”, which implies the need in the global economy for focusing on the end user.

The main tool for accessing the world market, which is the primary objective of all tourism organizations, involves the creation of websites that provide relevant information for potential visitors. Website is an “identity card” of the organization and one of the main promotional tools in the modern marketing. The main challenge of the website is to attract visitors, but generally, the quality of the website is not a primary factor for this as they are already attracted by the destinations. Another success factor is to make the website visitors re-visit the website, by rating it highly in quality and accessibility to interesting sources of information (Kotler, Wong, Saunders, & Gary, 2007), which can also be achieved through frequent and relevant updates to the website. Doolin et al. (2002) emphasize the importance of the ease of use, interactivity and flexibility of websites in the destination web marketing. A site content of the tourist destinations is particularly important because it directly affects the perceived image of the destination and creates a virtual experience for consumers.

Through a review of the literature, Lepp, Gibson, & Lane (2011) have showed in their research that the characteristics of websites play an important role in the creation, update and maintenance of the destination image. Building from a simple presentation of the relevant information up to the interaction with the content of websites, tourism organizations can activate visitors to participate, store information about their preferences, and at the end, they can use this information to further deliver personalized communication and service. Apart from delivering the information, a website should also provide the possibility for obtaining a feedback from its visitors. Additionally, the web analytics can provide more detailed information on the movement of visitors, their interests, etc.

Kotler, Bowen, & Makens (2010) state that the website of a tourist destination should contain the following information: (1) the arrival to the destination (transportation), (2) the possibility of visiting different locations at the destination (e.g. rent-a-car services), (3) places to stay at (hotel, private accommodation and other options), (4) activities (what one can see during the visit, where one can eat or shop, a list of the offered events). The above is recognized by the Croatian Ministry of Tourism (Ministarstvo turizma, 2013), which also recommends a further turn towards the electronic media and a special emphasis on the: (i) validation and improvement of tourist board websites, (ii) more intense use of the social web, and (iii) intensive development of applications for mobile devices.



## WEBSITE EVALUATION

Recently, different approaches for website evaluation were introduced. For example, Chiou et al. (2010) reported the following indicators as the most common: web usability and design, content analysis, quality, user acceptance and user satisfaction. Based on the literature review, the authors identified 83 studies from 23 journals in the period from 1995 to 2006 and pointed out that studies evaluating websites are usually done from the perspective of information systems and marketing as a research domain, while recently the most common approach is the combination of the two domains. From the analysis of the existing studies that have made the adjustment of model and/or evaluation instruments for the purpose of conducting the websites evaluation in tourism, Law et al. (2010) grouped the methods into the following five categories: counting method, user judgment, automated method, numerical computation and combined methods.

Counting method is used to evaluate the performance of a site or to determine its content richness. This method of evaluation requires a well-prepared list to verify the existence of the required attributes on the web. In some studies website evaluation in tourism was carried out using only the method of counting. For example, Zhou & DeSantis (2005) evaluated the content of tourist websites of cities in North America, Europe, Asia, Australia and Africa in this way, while Bastida and Juan (2014) similarly evaluated websites of four global destination brands: Beijing, Hong Kong, Shanghai, and Taipei.

Automated methods of websites evaluation are becoming more numerous and they cover various areas of usability testing, including for instance, user task analysis (learnability, intuitiveness, and efficiency), readability, site navigability, accessibility, website speed and so on. There are many tools (mainly online) that can be used to assess the usability of websites and the evaluation approaches vary from syntax checking and design analysis to the comparison of the characteristics of the site objects to the empirically established metrics (Tiedtke et al., 2002). The survey method based on the user judgment can be considered as a method of external evaluation that is used to test whether the website works in a way that meets the user's expectations (Chiou et al., 2010). Studies that have applied the method of user judgment have mostly evaluated the satisfaction and user perception with the criteria that involved the perceived usefulness, ease of use, accessibility and user attitudes towards website content and functionality (Law et al., 2010). Kotler et al. (2010) state that destination management organizations have to put great emphasis on the website homepage because it is the "showcase" of the destination in the world market. Therefore, the homepage needs to have very good graphics, with composition and colors that should never overpower the text on the page. In order to analyze the factors of website evaluation used in various studies, Chiou et al. (2010) ranked common factors of various studies, with the ease of use and information quality being the most common.

This paper continues with an overview of the research model, instruments and procedures, followed by research results and conclusions about the possibilities of using different methods and approaches for the evaluation of websites in tourism.

## METHODOLOGY

In this research, the websites of tourist boards of five counties in the Republic of Croatia were analysed. The counties were selected by the criterion that they had to have guest arrivals exceeding one million. According to the Ministry of Tourism in 2012 and 2013 (Ministarstvo turizma, 2014), this criterion was met by the following five counties: Kvarner (<http://www.kvarner.hr/>), Zadar (<http://www.zadar.hr/>), Split-Dalmatia (<http://www.dalmatia.hr/hr>), Istria (<http://www.istra.hr/>) and Dubrovnik and Neretva (<http://visitdubrovnik.hr/>).



## RESEARCH MODEL

Using website for promotion of tourist destinations is one of the main focuses of destination management. Therefore, it is extremely important for these to be accessible, easy to use and able to create a better virtual experience for visitors according to the quality of available information, usefulness of the published content and their satisfaction. According to Kotler et al. (2007) special attention when creating the web content should be focused on (1) context: the appearance and organization of the website, (2) content: text, images, sound and video, (3) community: communication among users, (4) adjustment for different users: the ability to personalize, (5) communication: between the site and its users - it should be maximally easy to use, (6) links to other websites, (7) trade: the ability to perform transactions (orders, bookings, etc.). According to the Operational Marketing Plan of the Croatian Tourist Board for 2013, it is planned to increase the funding for Internet marketing in the amount of 109%, and for the managing the internet website of the Croatian tourist board in the amount of 213%. Taking into account the importance of improving the specified websites in tourism, this paper defines the research model (Figure 1) that combines the models of information pyramid (Garača, 2008), logical organization of website (Home Page, Main sections and Subsections), and selected important aspects of the website (Positioning, Information quality, and Accessibility), which will be evaluated in this study by using different methods. Information pyramid model is selected as the starting point because it indicates three levels of decision-making related to the website: operational, tactical and strategic, and is directly related to the quantity and information value of the data represented on the Website.

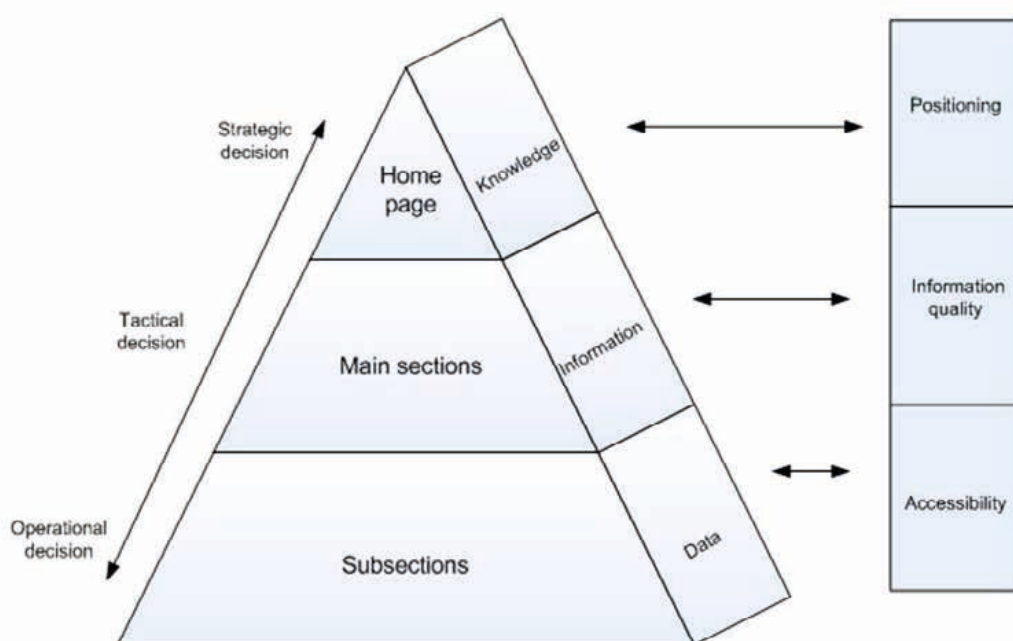


Figure 1: Research model of website evaluation

At the very top of the pyramid, which is marked by the need for strategic decisions, there is a home page of website that will be evaluated in this paper from the perspective of end users. The middle level is characterized largely by tactical decisions as the amount of information grows and distributes to the main sections; therefore, at this level the evaluation of information quality (content) will be carried out. At the very bottom of the pyramid, there are operational, everyday decisions; the amount of data is the largest, while their information value is the smallest. Given that this level of information pyramid is characterized mainly by automated decisions, the evaluation of websites accessibility will be carried out.

## PROCEDURE

In order to evaluate the selected five County Tourist Board websites, the following methods were used: a counting method, an automated method and a user judgment method. Figure 2 gives an overview of the methods and criteria applied for the evaluation and used to assess the site’s attributes (positioning, information quality, and accessibility). When collecting the data on the accessibility of each website the automated method was applied by using the online tool WAVE. In addition to a detailed report on potential problems in the accessibility of websites, the tool also gives recommendations for their resolving. Furthermore, for a comparison of the data on the quality and structure of information available from websites, a checklist was prepared. It was constructed on the basis of theoretical studies and a review of the best practices. Through the analysis of the content of each website, the positioning of each Tourist County was established, and the results were then compared to the first impression of the users, i.e. visitors of the website, as reported by the user judgment method.

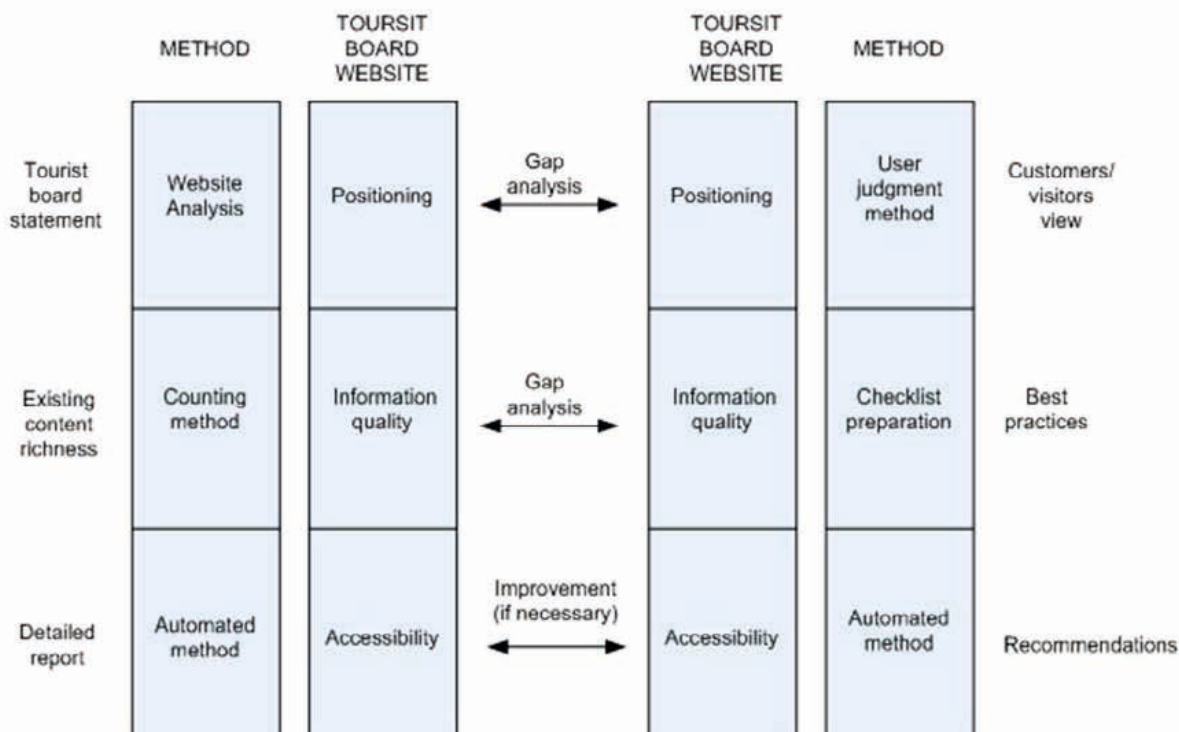


Figure 2: Procedures

A brief overview of each of the used methods, together with a description of the research process, is given further in the paper.

### Automated method

By using the online web service WAVE (available at: <http://wave.webaim.org/>) it is possible to evaluate the accessibility of web content. WAVE has been developed and is available as a free service provided to the community by the WebAIM. WAVE was originally launched in 2001 and since then it has been used for evaluating the accessibility of millions of websites (WebAIM, 2014). The term web accessibility means the availability of web content has to be ensured for all users, including people with disabilities and the elderly. In doing so, users should be able to recognize, understand, cope and interact with web content (W3C, 2014). By using the above mentioned tool, the evaluation of the accessibility of the five studied websites was conducted.





### Counting method

There are a number of criteria that destination management organizations (DMO) must consider in order to produce a high quality website. The site should be organized in several key components (Kotler et al., 2010): (1) About the DMO - a vision or a mission of the organization should be described there, (2) Tourism products / services, (3) FAQ - frequently asked questions, (4) Possibility to order online - possibility of booking, (5) An interactive application form, guestbooks - the goal is to connect with the visitors in order to obtain the feedback, (6) News - updated data and bulletins, (7) Gift items – the additional value is added if the page offers services such as backgrounds for the computer, postcards, etc. In this paper, the evaluation of websites by the counting method was done on the basis of the instrument containing a total of 23 items, divided into three main categories (according to Dion & Woodside (2010) in Bastida and Juan (2014)): (a) the information or tools that visitors need before the trip, (b) the information or tools that visitors need during the trip, and (c) activities related to the actual website. In order to find out whether the analysed attributes were present on the studied websites, the evaluation was carried out twice by the author of this paper. Results were compared and revised in order to achieve maximum reliability.

### User judgment method

A survey method for website evaluation based on the user judgment was carried out using the online tool “A Five Second Test” that displays design of website home page to respondents for only five seconds. The context for the website evaluation was given with the following guidance “While planning a winter or summer holidays you encountered the following website. Try to look at the website offer for 5 seconds.” After the time expired the respondents were asked the following questions in an online form: (1) Which destination is presented on the site?, (2) What was most noticeable on the page?, (3) How would you rate the design of that page (1-worst design, 5- best design), (4) Write one word which best describes your impression of the website. The subjects were third year students with the orientation in Small Enterprise Management at the Faculty of Economics, University of Split. The research was conducted on a voluntary basis in a controlled environment, during one of the classes in a computer lab.

## RESULTS

### EVALUATING THE ACCESSIBILITY OF WEBSITES

First, the accessibility of tourist board websites from the five counties was evaluated with the automated method; by using the online web service WAVE. Table 1 shows the results of the websites evaluation grouped into five categories: errors, alerts, features, structural elements and contrast errors. The highest number of errors (empty heading, missing alternative text, missing form label, multiple tags form, missing document language, and an empty link) is recorded on the website of the Istria County Tourist Board (47,50%), while the least mistakes were on the home page of Kvarner County (1,25%). However, the highest percentage of alerts (redundant title text and/or redundant alternative text, redundant links and/or confusing names link, no heading structures and/or skipping the title order, very small text, fieldset missing legend, noscript element and/or Flash content) was also on the pages of the tourist board of Kvarner County (64,38%) and the lowest on the Zadar County Tourist Board homepage. Good features of websites (alternative text for images, null or empty alternative text, form label) were recorded mainly on the pages of the Kvarner County Tourist Board (50,50%), while the lowest percentage of the good features was present on the site of the





Zadar County Tourist Board (0.99%). The largest number of structural elements (titles of all levels, ordered and unordered lists, layout tables) was on the website of Istria Tourist Board (61.15%). This site also had the largest number of contrast errors (59.19%).

Table 1: Results of the website accessibility evaluation

Website of the Tourist Boards	Kvarner		Zadar		Split-Dalmatia		Istria		Dubrovnik and Neretva		Total	
Address of the website	http://www.kvarner.hr/		http://www.zadar.hr/		http://www.dalmatia.hr/		http://www.istra.hr/		http://visit-dubrovnik.hr/			
	f	%	f	%	f	%	f	%	f	%	f	%
<b>Errors</b>	<b>1</b>	<b>1.25%</b>	<b>24</b>	<b>30%</b>	<b>5</b>	<b>6.25%</b>	<b>38</b>	<b>47.50%</b>	<b>12</b>	<b>15%</b>	<b>80</b>	<b>100%</b>
- Empty heading	1	50%	0	50%	1	0	0	0	0	0	2	100%
- Missing alternative text	0	0	16	31.37%	2	3.92%	28	54.90%	5	9.80%	51	100%
- Missing form label	0	0	2	28.57%	0	0	4	57.14%	1	14.29%	7	100%
- Multiple tags form	0	0	0	0	0	0	2	100%	0	0	2	100%
- Document language missing	0	0	1	50%	0	0	1	50%	0	0	2	100%
- Empty link	0	0	5	31.25%	2	12.5%	3	18.75%	6	37.5%	16	100%
<b>Alerts</b>	<b>141</b>	<b>64.38%</b>	<b>7</b>	<b>3.20%</b>	<b>28</b>	<b>12.79%</b>	<b>18</b>	<b>8.22%</b>	<b>25</b>	<b>11.42%</b>	<b>219</b>	<b>100%</b>
- Redundant title text and / or redundant alternative text	134	82.72%	0	0	10	6.17%	0	0	18	11.11%	162	100%
- Redundant links and / or confusing names link	3	7.89%	5	13.16%	14	36.84%	14	36.84%	2	5.26%	38	100%
- No heading structures and / or skipping the title order	1	16.67%	1	16.67%	2	33.33%	1	16.67%	1	16.67%	6	100%
- Very small text	1	100%	0	0	0	0	0	0	0	0	1	100%
- Fieldset missing legend	1	33.33%	0	0	0	0	2	66.67%	0	0	3	100%
- Noscript element and / or Flash content	1	11.11%	1	11.11%	2	22.22%	1	11.11%	4	44.44%	9	100%
<b>Features</b>	<b>51</b>	<b>50.50%</b>	<b>1</b>	<b>0.99%</b>	<b>32</b>	<b>31.68%</b>	<b>13</b>	<b>12.87%</b>	<b>4</b>	<b>3.96%</b>	<b>101</b>	<b>100%</b>
- Alternative text for images	49	62.03%	1	1.27%	25	31.65%	1	1.27%	3	3.8%	79	100%
- Null or empty alternative text	1	6.25%	0	0	6	37.5%	8	50%	1	6.25%	16	100%
- Form label	1	16.67%	0	0	1	16.67%	4	66.67%	0	0	6	100%
<b>Structural elements</b> (titles of all levels, ordered and unordered lists, layout tables)	<b>42</b>	<b>15.11%</b>	<b>18</b>	<b>6.47%</b>	<b>37</b>	<b>13.31%</b>	<b>170</b>	<b>61.15%</b>	<b>11</b>	<b>3.96%</b>	<b>278</b>	<b>100%</b>
<b>Contrast errors</b>	<b>11</b>	<b>1.79%</b>	<b>71</b>	<b>11.54%</b>	<b>131</b>	<b>21.30%</b>	<b>364</b>	<b>59.19%</b>	<b>38</b>	<b>6.18%</b>	<b>615</b>	<b>100%</b>

It is important to point out that the evaluation was carried out on the same day for all five websites (20/10/2014), and that Table 1 can be used for the purposes of comparison given that it is a historical data recorded on the aforementioned date. Since the updating and upgrading of websites, including the aspect of their accessibility is a very dynamic process; such testing and eventual comparisons with the competitors should be conducted regularly.

## EVALUATING THE INFORMATION QUALITY (CONTENT) OF WEBSITES

By applying the counting method, the websites have been assessed according to 23 items presented in Table 2. The attributes are divided into three main categories: information or tools that visitors need before the trip, information or tools that visitors need during the trip and activities related to the actual website. Only those attributes that fully met the criteria were added to the total sum. For example, if there is no direct possibility to make reservations on the website, but there are links to web pages of hotels for making a reservation, this attribute is not counted in the total sum. The number of foreign languages and the ease of use were evaluated separately.

*Table 2: Results of the information quality (content) evaluation*

	Website attributes	Kvarner	Zadar	Split-Dalmatia	Istria	Dubrovnik and Neretva
Before	Hotel booking	No, but links	No, but links	No, but links	Yes	No, but links
	Hotel amenities	Yes	Yes	Yes	Yes	Yes
	Travelling	Yes	Yes	Yes	Yes	No
	Visa information	No	No	Yes	Yes	No
	Create a trip	Yes	Yes	Yes	Yes	No
	Weather	Yes	No	Yes	Yes	Yes
	Historical information	Yes	Yes	Yes	Yes	No
During	Safety & security	Yes	No	Yes	Yes	No
	Maps	Yes	Yes	Yes	No	Yes
	Transportation	Yes	No	Yes	Yes	Yes
	Tourist attractions	Yes	Yes	Yes	Yes	Yes
	Events calendar	Yes	No	Yes	Yes	Yes
	Events booking	No, but links	No	No, but links	No, but links	No, but links
	Disabilities	Yes	No	Yes	No	No
	Families	Yes	No	No	Yes	No
Website	Nightlife	No	No	No	No	No
	Membership	Yes	No	Yes	Yes	Yes
	Languages	12	5	7	4	2
	Cellphone Apps	No	No	Yes	Yes	No
	Games	No	No	No	No	No
	Videos	Yes	Yes	Yes	Yes	Yes
	Search engine	Yes	No	No	Yes	Yes
Ease of use	Easy	Very easy	Very easy	Very easy	Easy	
TOTAL (21 items)		15   71,43%	7   33,33%	15   71,43%	16   76,20%	9   42,86%

For this part of the research it is also important to point out that the evaluation was carried out on the same day for all five websites (08/01/2015). The Istria site is the best among the five analysed websites; it receives a total score of 16 out of 21, and it is the only website with the possibility of accommodation booking. If the category “during the stay” was improved with a section for people with disabilities and with the maps, the Istria website would be a perfect example for an excellent tourism website.

The Kvarner and Split-Dalmatia websites have the same number of points and very similarly rated categories (before, during and website). However, significant differences exist in the number of foreign languages and the ease of use; Kvarner (12) and easy, Split-Dalmatia (7) and very easy. On the fourth place is Dubrovnik and Neretva website, and the last one is the Zadar website with a total score of 7 out of 21. Interestingly, this order is in the agreement with the ranking of counties based on the number of nights and tourists in 2012 and 2013, as reported by the Ministry of Tourism.

## EVALUATING USER PERCEPTIONS (POSITIONING) OF WEBSITES

In order to evaluate user perceptions of the five analysed websites, a survey method based on the user judgment was carried out. The online tool “A Five Second Test” displayed a design of the website home pages to respondents for only five seconds. It should be noted that respondents come from relatively homogeneous groups with regard to similar characteristics in terms of education, age and economic situation. A significant difference is only in terms of gender, as shown in Table 3.

*Table 3. General characteristics of respondents*

Website of the Tourist Boards	Kvarner		Zadar		Split-Dalmatia		Istria		Dubrovnik and Neretva		Total	
	f	%	f	%	f	%	f	%	f	%	f	%
<b>Male</b>	10	34,48%	4	15,38%	8	32%	6	28,57%	11	42,31%	39	30,71%
<b>Female</b>	19	65,52%	22	84,62%	17	68%	15	71,43%	15	57,69%	88	69,29%
<b>Total</b>	29	100%	26	100%	25	100%	21	100%	26	100%	127	100%

Table 4 shows the results of “A Five Second Test” which was used to explore user perceptions of the analysed website. The goal was to determine if their perception aligned with the desired presentation and positioning by the County Tourist Boards.

Table 4. Results of user perceptions of websites "A Five Second Test"

Website of the Tourist Boards	Kvarner		Zadar		Split-Dalmatia		Istria		Dubrovnik and Neretva	
	f	%	f	%	f	%	f	%	f	%
Which destination is presented on the site?	Kvarner	72,41%	Zadar	73,08%	Bol	42,31%	Istra	47,62%	Dubrovnik	76,92%
	Velebit	6,87%	-	-	Brac	2,4%	Dalmatia	14,29%	Dubrovnik, riviera and islands	11,54%
	Others	17,24%	Others*	26,92%	Others	33,69%	Others	38,1%	Others	3,85%
What was most noticeable on the page?	Bird	51,72%	Sea	73,08%	Sea	44%	Sea	23,81%	Sea	19,26%
	Eagle	27,58%	Ships	15,38%	Beach	40%	Pool	23,81%	Rental	11,54%
	Others	21,69%	Others*	11,54%	Others	16%	Others	52,38%	Others	69,23%
How would you rate the design of website (1-worst design, 5- best design),	5	7,41%	5	23,08%	5	2,4%	5	14,29%	5	23,08%
	4	40,74%	4	53,85%	4	32%	4	52,38%	4	42,31%
	3	44,44%	3	19,23%	3	40%	3	28,57%	3	26,92%
	2	7,41%	2	3,85%	2	4%	2	9,52%	2	7,70%
	1	0%	1	0%	1	0%	1	0%	1	0%
Website design (Mean)	3,48	69,6%	3,96	79,2%	3,76	75,2%	3,76	75,2%	3,81	76,2%
Write one word which best describe your experience of website.	Interesting	14,81%	Holiday	23,08%	Nice	20%	Relaxing	9,52%	Fast	19,23%
	Nature	7,41%	Summer	11,54%	Perfect	16%	Perfect	9,52%	Impressive	7,69%
	Diversity	7,41%	Nice	11,54%	Summer	12%	Ok	9,52%	Interesting	7,69%
	Others*	70,37%	Others*	53,84%	Others	52%	Others*	71,43%	Others	65,39%

Respondents have accurately determined which destination was presented for Kvarner, Zadar, Dubrovnik and Neretva County. For Split-Dalmatia County a large number of respondents (66.31%) stated that this was an island of Brac, and the settlement Bol. For the county Istria, 14.29% of respondents stated this was Dalmatia. By analyzing the content of each website, it was found that the tourist board statement was available only on Kvarner ("Welcome to Kvarner, destination of vacation, relaxation and fun!", "Diversity is beautiful.") and Zadar ("A sea of colours") websites. When comparing these statement with the first impressions of the users/visitors of the website it was determined that they were in good agreement. The average score for the website design for all five websites was slightly lower than 4 (in the range from 3,48 to 3,96).

As previously mentioned, updating and upgrading of the websites, including the aspects of design and positioning, is a very dynamic process. Therefore, eventual website comparisons should be conducted regularly.



## CONCLUSION

The effectiveness of a website can be measured according to numerous criteria, such as technical characteristics of the server and website, usability and accessibility of websites, the quality of content and the presence of websites on the Internet (Andrić, 2012). In this paper, results were presented in terms of the websites accessibility, quality of available information and the first impressions of website visitors. Since there has been only a limited research into tourism website evaluation, and existing tourism literature simply does not have any commonly agreed-upon standards or techniques for website evaluation (Law et al., 2010), this work gives an important contribution in assessing and exploring the possibilities of different methods for websites evaluation in tourism.

In accordance with the research model, at the top of the information pyramid there is a home page of website that should be presented clearly and attractively. At the middle level, which is characterized with a large amount of information, the information quality (content) should meet the needs of the visitor before and during the trip, and also provide them with additional features (membership, games, videos, cellphone apps etc.). In order to access the website as simply as possible, a special attention should be paid at its accessibility and additionally on the adaptation of websites for blind and visually impaired persons. Although the presented results are subject to change due to the dynamic process of updating and upgrading of websites, this study showed the advantage of using a combination of different methods in the evaluation of websites in tourism.

Finally, it can be concluded that it is almost impossible to assess how the web site should be arranged in order to truly fulfil its purpose. However, there are certain rules and tips that can be followed in order to determine all the relevant information related to the web site. According to Ružić, Bilo & Turkalj (2009) tourist destination sites have certain peculiarities in relation to other websites. They represent an integral tourist product of a destination (includes integration of more tangible and intangible elements, such as the supply of the private sector and the natural attractiveness of the destination) and therefore the complexity of such websites is greater. It is also important to point out that websites should have functional quality elements (such as fast loading, visual elements, good design and easy navigation), and information efficiency, which means consistently taking into account elements such as forms, accuracy of information, complexity and timing.



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# Green Branding and Influence On Consumer's Perceptions and Buying the Green Products

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## *ABSTRACT*

Consumer's decision to buy a green product is associated with producer's brand names. A brand is perceived as a measure of quality, but also as a measure of producer's focus on issues such as health, protection of natural or social environment, energy saving measures, etc., which means focus on different aspects of environmental protection.

In this study we investigate the extent to which consumers, when deciding upon purchasing a product, perceive the level of specific brand's focus on protection of the environment. According to data obtained in the study, we believe that consumers usually in majority of cases recognize common types of green brand names in industries such as food production, agriculture, textile and cosmetic. Somewhat less frequently they are able to list green brand names in the field of technical products.

Our findings represent a contribution which might be implemented by the marketing departments in companies that wish to promote green brand names and inform consumers about them, to raise the awareness and perception of importance of buying green products, and thus affect the volume of sales of such product. The paper might be useful in decision making upon the extent and content of marketing actions, in order to encourage the purchase of green products.

*Key words: green branding, green products, consumers' perception, marketing, network*



## INTRODUCTION

Green brand products are produced in processes requiring low energy consumption, with reduced usage of resources, and less harmful disposal of waste materials, thus harming the environment as little as possible. Besides, the resources used in such processes can be reused or recycled (Elkington & Hailes, 1993; Simon, 1995). Nowadays, the main markets for the green brand products are located in developed countries such as countries in Western Europe, North America, South-East Asia and Australia, in which the domestic supply cannot satisfy market needs (Borregaard et al., 2003; Tyburski & Zakovska-Biermans, 2003).

In the paper we aim to investigate consumers' perceptions of green brands. We are interested to understand whether the consumers are able to list so called green brands and distinguish between the normal brands and green brands as well as identify which green brands' perceptions relate to each other. These way the paper could suggest useful directions for planning and delivery of marketing communication focused on positioning of green brands.

## GREEN BRANDING

Kotler (1998) defines a brand as a name, term, symbol, design, or a combination of all these. By his opinion a brand makes it possible to identify goods or services of a company or a group of companies, and distinguish them from the competition. It provides the consumers with identity, safety, added value and relevant information about the products (Randall, 1993), related to products' properties and personality on one hand, and benefits, values, and culture stemming from the products characteristics.

A brand creates value for consumers and other market participants as well as employees (Miller & Muir, 2004), and enables cultivated relationships among them (Pfajfar & Končeničnik, 2007). In recent times, rapid development of brands can be witnessed, because they are perceived as the most effective tool for differentiation among competitors, especially related to consumers' perceptions. Brands might also be an important element of marketing strategies in companies trying to develop such a relationships with consumers which is difficult to be imitated by the competitors (Adcock, 2000). On the other hand, brands can be an important source of competitive advantage for a business as they represent a strong barrier competitors' performance. Competitors can easily copy the products or services, but they cannot copy the consumer's tacit experience with products and services. Brands are also important element of non-price competition as consumers intending to purchase similar but cheaper and easily available products may perceive the differences among products only in the case of brand names.

Brand positioning is an iterative process consisting of deliberate and proactive actions aiming to define distinct consumer's perceptions (Kalafatis et al., 2000). It is a part of brand identity creation (Aaker & Joachimsthaler, 2000). As stated by Aaker & Joachimsthaler (2000), the value proposition has to be actively communicated to the target audience. Therefore, the brand positioning depends on interaction of many marketing tools and especially marketing communication.



## CONSUMERS' PERCEPTIONS OF GREEN BRANDS

Green brand's most important feature are product's properties linked to its impact on the environment which should be environmentally acceptable. Green brand is therefore better aligned with the environment and have less negative impacts on environment (Hartman et al., 2005).

In the last few decades, green marketing is an important academic research topic. Nevertheless, just a few studies can be found focusing on green branding (Calomarde, 2000; Fraj & Martinez, 2002). Besides, it seems that in many companies it is not of strategic importance to clearly define green brand identity as a prerequisite for delivery of green brand value (Aaker & Joachimsthaler, 2000). Green brand identity is a specific set of brand attributes and benefits related to the reduced environmental impact of the brand and its perception as being environmentally.

The positioning of green brands requires active communication in the market. The communication should be especially focused on informing about environmental attributes. Green brand positioning strategies can be functional or emotional or both. Green products cannot be successful if the green brand is not communicated effectively (Pickett et al., 1995). Different studies (Smith et al., 1994; Finger, 1994) show that especially affective factors have a positive influence on green purchase behaviour, and recommend that green brand positioning should satisfy emotional needs of consumers.

## IMPLICATIONS AND LIMITATIONS OF GREEN BRANDING

Green consumerism is based on purchase decisions that take into account environmental criteria (Peattie, 1995). Research (Butler & Francis, 1997; Oskamp et al., 1991; Hiller & Kim, 2009) shows that most consumers are concerned about the environment but this concern does not lead them to behaviour which would be oriented toward environmental protection and purchase of green products.

Research (Shim, 1995; Fraj & Martinez, 2006; Koszewska, 2011) stresses out that green consumers are younger, better educated and with higher income. However, not all of the authors are of opinion that demography is the best predictor of green behaviour - some of them believe that it is better to use socio-psychological data. For example, Hemmelskamp & Brockmann (1997) list the following predictors of green purchasing:

- consumer satisfaction is not always compatible with the perception of green products;
- the influence of social environment on the consumer's values;
- quick and easy identification of green products;
- availability of products in stores in the local environment;
- adjustment of products prices to purchasing opportunities of local markets.



Green products' recognition in the market and visual exposure of the green products' consumption affect green products' perceptions of the consumers as well. They increase the consumers' desire to buy a green product on one side and make them more environmentally conscious on the other (Markandya et al., 2001). Symbols characterising the brand might increase the products' visibility as well. For example, research confirms that EU-code for the Environment (Environmental daisy) is one of the most effective tools for promotion of green products' perception in EU (Koszevska, 2011). It is worth to note that consumer's eco and green label are clearly associated with the absence of harmful substances, but very little consumers link the labels with use of green technologies (Targosz-Wrona, 2009).

Research indicates that on average consumers are willing to pay more for green products. Prediction of willingness to pay a higher price might be an important indicator of consumers' attitudes towards green products (Chan, 2000, Shu-Hwa, 2010). On the other hand, the research notes that the purchases are actually carried out by only about 10% of the consumers willing to buy one. As stressed by Scarlett (1994) and Laroche et al. (2001), the consumers rely on the products' labels when deciding about the purchase of the green products. Lack of confidence in green products may be the result of inconsistent marketing communication strategies, which might lead to the difference between the proportion of consumers who say that they are willing to pay more for green products and the proportion of those that actually do the purchase Laroche et al. (2001) also note, that the age, education and income do not affect the consumers' intention to pay more for green products.

## RESEARCH METHODOLOGY

To collect the data for the research we used snowball method. The data was gathered in the period from May to September 2014 by sending questionnaires to 800 randomly selected individuals via e-mail and asking them to pass the questionnaire to their acquaintances. This way 408 completed questionnaires were collected.

37% of the questionnaires were completed by male and the rest (67%) by female respondents. 61% of the sample were employed or self-employed, 34% were students, and 5% of the respondents were unemployed. The average age of the respondents was 39 years. The non-response bias was assessed by comparing early respondents to late respondents using chi-square tests of independence (Armstrong & Overton, 1977). No significant differences between the two groups of respondents were found.

We combined measurement scales developed by Pickett-Baker & Ozaki (2008) and Kim (2011) with some own questions. Operationalisations of measurement variables reflect validated operationalisations employed in past research with minor modifications. We made the statistical verification of the measurement scales with Cronbach's alpha test and EFA. The variables in the measuring scales were originally in English and were translated into Slovene. We followed the approach suggested by Harkness (2010), using translation, review and adjudication with back translation as the accompanying assessment procedure, followed by pretesting and documentation.

In the survey the respondents listed up to 5 most known green brands. Not all of the respondents answered this question on one hand, on the other hand some of the brand names listed in the survey are actually not brand names but names of companies offering products which the respondents perceive as green products.

Descriptive statistical analysis and network analysis was carried out by SPSS and Pajek (Slovenian word for Spider) (Batagelj & Mrvar, 2011). Pajek is a computer program for analysing and visualizing large networks (Wasserman & Faust, 1994). In the first part of the analysis descriptive statistics of the data is presented showing the frequency of the names in the listings and of categories in which the names of brands or companies may be included.



## ANALYSIS AND DISCUSSION

### ANALYSIS OF THE LISTED BRAND NAMES

The first finding of the analysis which should be stressed out is the number or share of respondents who actually answered the question related to the knowledge of green brand names. Among 408 completed questionnaires only 85 (21%) of them answered this question. It seems that the knowledge on green brand names is quite poor among Slovenian consumers. Additionally, as can be seen in Table 2, respondents in many cases do not distinguish between brand names and names of the companies. In the analysis we therefore do not make any difference between the first and the second.

The names listed by the respondents are categorised into 9 categories as shown in Table 1. The majority of names belong to the category of food (39), technology (16), cosmetics (15), clothing (9) and cleaning products (8). In the listings some other categories may be recognized such as trade (4), gardening (3) and energy.

*Table 1: Brands by the categories*

No.	Category of brands	Number of Brands	%
1	Food	39	38%
2	Tehnique	16	16%
3	Cosmetics	15	15%
4	Clothing	9	9%
5	Cleaning products	8	8%
6	Trade	4	4%
7	Gardening	3	3%
8	Energy	1	1%
9	Other	7	7%

Table 2: List of most frequently mentioned brand names or companies

Name	Frequency
Ljubljanske mlekarne*/ MU	11
Zelene Doline	11
Addidas*	10
Fructal	9
Toyota*	9
Nokia*	8
Gorenje*	6
H&M*	6
Natura	6
Biodar	5
Frosch	4
Mercator*	4
Natureta	4
Nike	4
Organko (biological waste basket)	4
Alnatura	3
Ekodar	3
Ford*	3
Milka	3
Odlično	3
Paloma*	3

\* names of companies

The most frequently stated names in the survey are Ljubljanske mlekarne as a company name and MU which is one of its brand names, and Zelene doline which is also the name of a milk producer. Fructal as a producer of natural juices is also perceived as a relatively well known name. Mercator, Slovenian biggest retail chain, and Natureta as a brand related to canned fruit and vegetables are also perceived as important Slovenian green brand names. Technical producers such as Adidas, Toyota (producer of cars), Nokia (producer of mobile phones), and Gorenje (producer of home appliances) are also among the most frequently stated names. Considering the data, we can stress out the importance of the H&M as a retail chain selling clothes.

## NETWORK ANALYSIS

The second step of the analysis was to establish a network containing the brand names listed by the respondents in the survey. Network relations were defined as the number of cases two words (brand names) occur together at the same respondent. The obtained network was undirected and weighted by the number of the abovementioned occurrences. To normalize the weights on the links we used the cosine dissimilarity. The cosine dissimilarity between words  $i$  and  $j$  has a value between 0 and 1 is calculated as

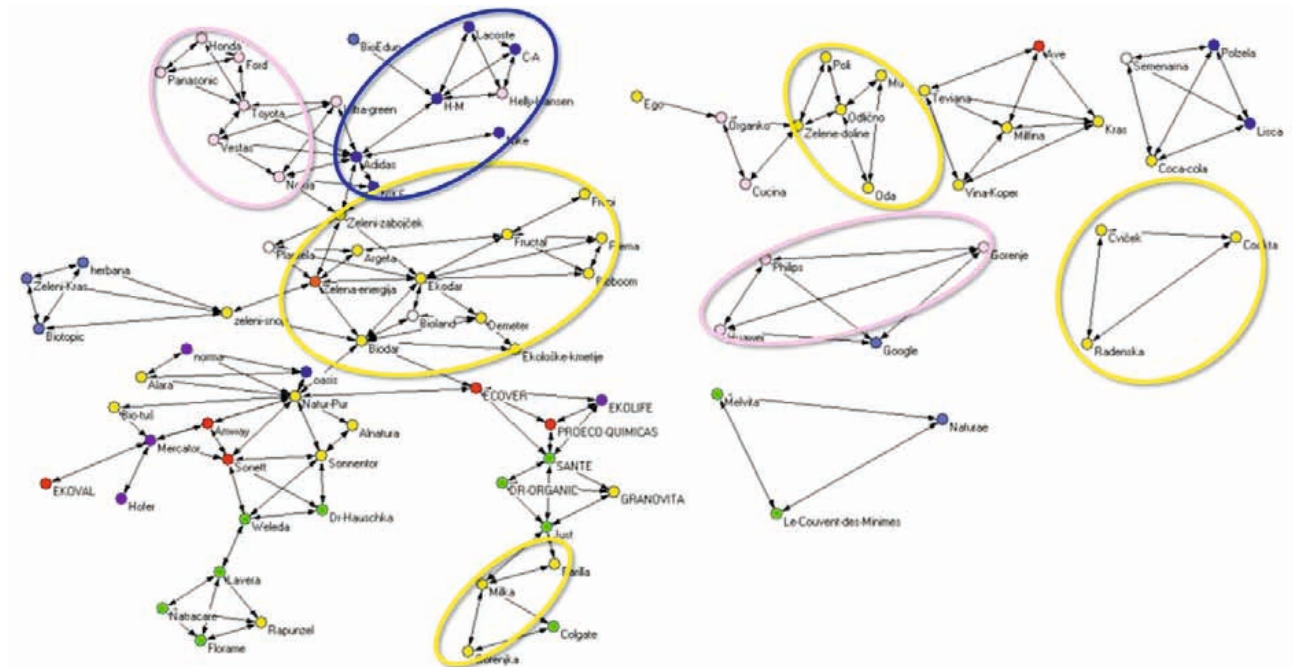


$$\cos(i, j) = \frac{\sum_{k \neq i, j} c_{ik} c_{jk}}{\sqrt{\sum_{k \neq i, j} c_{ik}^2 \sum_{k \neq i, j} c_{jk}^2}}$$

Consequently the matrix of all cosine dissimilarities among words in the frequency list is called the cosine-normalized matrix. This normalization technique is preferable over the Pearson correlation matrix (Schneider & Borlund, 2007) since the word-frequency distributions are usually not normally distributed. Although visualization is not an analytical technique it could serve as an intriguing method to communicate the results of other analytic methods. In our case, the results of the EFA informing about the latent dimensions can be made visible as good as possible. Therefore nodes in Picture 1 are coloured with colours: blue for clothes and shoes, pink for technology, yellow for food and farmers, red for cleaning equipment, green for hygiene and purple for chains of stores. Placement of nodes in Picture 1 was obtained using a spring embedder called the Kamada-Kawai algorithm.

We additionally used the PathFinder algorithm as a very efficient tool for removing less important links and nodes from the network. Therefore, only the *skeleton* of the network remains after using the PathFinder algorithm. It also preserves connectivity which is based on the concept of pair wise similarity. When applying the PathFinder algorithm two parameters (*r* and *q*) should be considered. The *r* parameter is used for calculating the distance of a path based on the Minkowski metric. On the other hand, the *q* parameter specifies that triangle inequalities must be satisfied for paths with less than *q* links. The number of links in a network obtained using the PathFinder algorithm is inversely proportional to the value of both parameters. The network obtained with *r* = ∞ and *q* = *n* - 1 (*n* is the number of nodes in basic network) has the least number of links and it is presented in Picture 1.

Picture 1: The model of connections





## DISCUSSION AND CONCLUSION

Tables 1 and 2 show that most brand names people are able to recall relate to food, technical and cosmetics products. The reason for this might be that such products are most frequently used in everyday life of people, besides, in the sample the vast majority of respondents were female. If there were more male respondents in the sample, the frequency of food and cosmetics brand names might be lower. Next finding of the research relates to respondents' knowledge of brand names. As already indicated, the consumers in many cases do not differentiate between the names of companies and brand names.

From the Picture 1 we can see, that the respondents relate brand names such as Ekodar, Argeta, Fructal, Biodar, Natur-pur, Alnatura, Bio-Tuš, Ekološke kmetije, Zeleni zaboječek, Gorenjka, Milka and Barilla in a sub-network or cluster of agriculture and food brand names. On the other hand, they connect Toyota, Ford, Honda, Panasonic and Nokia in a sub-network or cluster of technical products, and H&M, Adidas, Nike, C&A and Lacoste in a sub-network or cluster of clothing and footwear. From the Picture 1 we can assume that that consumers mostly relate brand names stemming from the same industries - such sub-networks or clusters are marked with circles. Besides, we can also see that in the network the majority of sub-networks or clusters relate to agriculture and food production. This is some kind of a normal situation because food products mostly play key role in everyday life of majority of people as already indicated, covering their basic needs.

On the other hand, we can find some mixed connections linking together brand names from different industries, such as (i) Coca-Cola (food), Lisca (clothing), Polzela (clothing) and Semenarna (agriculture) or (ii) Mu, Odlično, Zelene doline, Oda, Poli and Ego (food) and Cucina and Organko (technical products). These sub-networks or clusters mainly link together brand names from the same industry, nevertheless there are individual names from other industries in the clusters. This might be a consequence of the usage of the related products, the country of origin of such products, or a consequence of advertising. It is worth of mentioning that some of the respondents stress out the importance of retail chains' names (Mercator, Hofer). It seems, that consumers' perception of such names is also related to green products which are being sold in their stores.

It is important that consumers are aware of different brand names related to the green products, and marketing activities have the power to influence consumers' perception of green products. Producers with green brands are more often recognized as a green by the consumers. When today's consumers percept a product or a producer as green it is more likely that they will decide for a purchase. Marketing activities can help to enhance their perceptions of green products, but the messages should provide consumers with evidences and arguments about the green products and their production. The survey shows that Slovenian consumers mostly trust local food producers – probably because they know them well or their purchase decision bases on recommendations of persons they trust. Relatively poor knowledge about green products and green brands might be typical for Slovenian consumers thus marketing and promotion of such products and producers might still be a challenge for the marketing departments in Slovenian companies.





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# The impact of selected marketing resources of companies operating in B2B markets on the company performance

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## *ABSTRACT*

In connection with the use of marketing strategies in B2B markets we intend to explore the major characteristics of companies currently operating in B2B markets and will take into consideration the marketing activities of companies, management, quality assurance services and the impact these have on the success of such in B2B markets.

The study will be based on a review of the theoretical constructs and interpretations related to the implementation of marketing activities in the B2B markets (marketing strategy on B2B markets, ICT support for the implementation of marketing activities in B2B markets, market orientation, quality of service in B2B markets) in addition to an analysis of the interconnections between such constructs. We also wish to explore the consequences of direct and indirect impacts between the aforementioned characteristics in relation to the successful company performance.

By undertaking this research we hope to provide a clearer understanding of the role of marketing activities in B2B markets and how companies can use them to influence the effectiveness of its operations. As previously pointed out this may affect the way businesses operate and help create a clearer understanding of the implementation of marketing activities in B2B markets. Through research we want to create clearer guidelines for companies on how to adapt marketing activities in B2B markets to improve operations.

*Key words: marketing, marketing resources, B2B, company performance*

## INTRODUCTION

Businesses try to ensure competitive advantage over their competitors and achieve desired market share, and thus improve their performance (Jagodič & Dermol, 2012). The performance in the context of marketing activities is assessed in terms of marketing performance such as sales and market share growth, and financial performance such as profitability or return on investment. Marketing and financial performance can be measured by two separate constructs, or can be combined in a onedimensional performance measurement (Lehmann, 2004).

The construct of marketing strategies in B2B markets can be seen as longterm orientation into creation of value for customers and meeting customers' expectations. Marketing strategy allows for appropriate differentiation in the market, and improvement of competitive position against the competitors (Ostrom et al, 2010). In order to successfully implement marketing strategies it is clear that appropriate and up to date ICT technology should be used as a tool.

Modern technology should be a support of business processes because information and communications technology (ICT) enables companies to reduce costs, streamline processes and improve quality at all levels. It also allows for faster information flow, facilitates the adaptation to perceived market changes and taking the advantage of new market opportunities (Hengst & Henk, 2001).

Employees are important factor influencing company operations, as the success of a company depends on the market orientation of employees in order to properly implement strategy and realise goals. The interaction of employees with customers has an impact on the quality of company operation and performance. From this perspective, it is necessary to give special attention to building and nurturing the market orientation and inclusion of this orientation into the company's goals. All these can be achieved through appropriate communication and ICT support (Cruz, 2008).

The combination of market orientation, marketing strategy, and modern ICT can enable synergetic effects in the implementation of activities and the level of quality of service. Nevertheless, it is usually difficult to assess quality of service and besides, the customers evaluate it subjectively (Snoj & Mumel, 2001). In order to evaluate the quality of the service objectively and to encourage the customers to actually do it, it is reasonable to set very clear evaluation criteria to (Kotler, 1998).

Various authors (Hengst & Henk, 2001; Kaplan & Norton, 2001; Lehmann, 2004; Ling, 2004; Gounaris, 2006; Lyles & Salk, 2007; Cruz, 2008; Zu et al., 2008; Ostrom et al, 2010) studied only individual relationships between constructs (marketing strategy on B2B markets, ICT support for the implementation of marketing activities in B2B markets, market orientation, quality of service in B2B markets, company performance). With this research we want to fill this gap and investigate the links between these constructs. The research will provide new insights into the relationship between marketing strategy on B2B markets, ICT support for the implementation of marketing activities in B2B markets, market orientation and quality of service in B2B markets, and their impact on the company performance, which is important in terms of adapting the marketing activities of companies.

The aims of this paper are therefore (i) review of the literature related to the implementation of marketing activities in B2B markets, (ii) a detailed presentation of the concepts, (iii) the development of a measuring instrument, (iv) the implementation of international research and (v) the influence of the set of constructs on the company performance.

The definitions of the constructs are based on the fact that the marketing strategy and method of implementation of marketing activities are set by the company management and that in their preparations are involved also other company employees. Since the data will be collected through a questionnaire we can't completely exclude the subjectivity of given estimates, although the respondents should have available relevant information because of their position (Marketing Director). The research will be limited to a comparison between Slovenia and two other European countries. As an important limiting factor may expose the differences between countries which can be seen in the different political and economic system and thereby the differences in demographic, psychographic, corporate and other features (including the system of values). In the empirical verification of the



objective of the model is assumed linear relationship between the constructs, because so presupposes most of the methods provided for carrying out the analysis. There can also come to the inappropriate model specification, with use of intended statistical techniques based on linear connections. An important limitation is in the fact, that it is almost impossible to predict all directly and indirectly involved variables.

The paper consists at the first part of an overview of the available literature, followed by clarification of the constructs (marketing strategy on B2B markets, ICT support for the implementation of marketing activities in B2B markets, market orientation, quality of service in B2B markets) used in the research model. The contents continue with the presentation and identification of a company's performance. The paper is followed by a presentation of the conceptual model and definition of the measurement scales for the measurement of defined constructs. Than in the following of the paper is a Conclusion and at the end there is a Reference list.

## KEY MARKETING RESOURCES IN B2B MARKETS

### MARKETING ACTIVITIES

Marketing activities in B2B markets relate to business processes which enable companies to create a profitable relationship with the market and partners by satisfying the needs and providing mutual exchange of information (Kotler, 1998; Deeter-Schmelz & Kennedy, 2004). Such activities might be focused either on promotion of products or services, exchange of market information, developing the new products or services where are included customers,

In the literature it is hardly possible to find studies related to marketing of services as majority of them are focused on marketing of products. Considering marketing of services, authors most commonly compare or present differences arising from the marketing of products in the industrial sector (Gordon et al., 1993), and some of the authors (eg. Kuechler et al., 2001) investigated individual elements of marketing, which might affect company performance.

We can also find other authors who have dealt with marketing activities in B2B markets such as Freytag and Clarke (2001, Kohli et al. (2001), Kuechler et al. (2001) and Hunter et al. (2004) and they are just partially explored individual elements of marketing, which could affect the company performance. Furthermore, based on review articles and research of these authors, we find out, that none of them have simultaneously investigated and checked the interconnection of aforementioned concepts in one model.

### MARKETING STRATEGIES

The strategy is a fundamental document used by the company to achieve their objectives. Strategy can be defined as a plan and a set of measures planned in advance by the company to develop and achieve the strategic objectives. Marketing strategy is focused mainly on creating value for a customer and plays key role in realising business strategy (Kaplan & Norton, 2001; Webster, 2002).

On the B2B markets, companies have several different marketing strategies. Kotler (1998) mention the Following for example: segmentation strategy, strategy of market development, strategy of Geographical orientation (home / abroad), positioning



strategy, differentiation strategy for products and services. It should be noted that the B2B marketing strategy is part of the Entire company strategy

Focus on creating the value for customer should be a fundamental company strategy. Business and marketing strategy should allow the company for adequate differentiation in comparison with competitors and thereby improvement of competitive position in the market (Ostrom et al, 2010).

## ICT SUPPORT

The concept of ICT can be interpreted in terms of information technology (IT) and communications technology (KT), where IT includes all kind of technology, used for data and information processing (eg. Software and hardware equipment, data transmission and maintenance), and KT includes all possible forms of resources for transfer video and audio content (eg. internet network, e-mail, phone). Senn (1997) considers that the term ICT is used to describe the ability to create, store and forward data and information, where the most important components are hardware, software, networks, and knowledge and ability for using these tools. Because of extremely wide notion of ICT, we didn't find the unique explanation in available literature and we can say that each author emphasizes an aspect of ICT, what is the most important by their opinion.

Extremely rapid development of ICT in last decades has bring users the opportunities for growth, development and improved the quality of life and resulted in the dynamic development of the service sector (Bučar, 2001). In the literature we can find that companies with using ICT can reduce the cost of its operation and at the same time increase productivity. They can also create new better organization which helps them to improve its effectiveness, because the communication between employees is better, faster and simplified (Hengst & Henk, 2001).

For companies operating in B2B markets is characterized that they have fewer business partners who use newer ICT, that provide timely and accurate information. The lack of ICT support can cause problems to managers in companies in successfully coordinating the company capabilities with customers' expectations.

## MARKET ORIENTATION

We distinguish between internal and external market-oriented companies. Internal market orientation is defined as the use of marketing tools in the market of company's employees, while external marketing orientation is defined as use of all marketing tools and activities directly represent the company to customers. Therefore, it is necessary to deal with employees as internal customer. They are a key element of any company because they are in the contact with customers and they are providing the marketing activities and using different marketing tools (Ling, 2004; Gounaris, 2006).

Market orientation is important because of its focus on the continuous collection of information about the activities of competitors and the needs of target consumers'. In addition, market orientation is important also for preparing a marketing strategy and managing companies marketing activities. A big part of company communication with consumers', interaction and knowledge transfer based on consistent and committed use of the philosophy of market orientation. Since that communications requires human interaction with internal and external consumers, we can say that market orientation is especially important for service companies.

In this study, we are interested primarily on internal market orientation of the company, which is composed of three components, namely the generation, dissemination and response to obtained information (Kohli and Jaworski, 1990). Market orientation of





the company (internal and external) is as a result of various factors, economic and environmental activities in the company and can be changed deliberately or as a result of adaptation to market conditions (Homburg & Pflesser, 2000).

## SERVICE QUALITY

The service can be an act, performance, or achievement process that takes place between the provider and the client. Service does not imply possession (ownership) of anything. The services are intangible inseparable and heterogeneous. Quality is a compilation of all the properties and characteristics of the products or services that relate to their ability to meet directly expressed customers needs (Kotler, 1998). It is important that the quality is perceived by customers, and must be reflected in all activities of the company (Morgan, 1984).

It is very hard to measure the quality of service, because it is an abstract concept and therefore, is very important to provide quality services to the B2B market for creating the proper relationship between providers and users. The main elements to achieve service quality of service include reliability, responsiveness, sense of confidence, focus attention to the client and other tangible factors. We can assess quality on objective level, that can be measured and on subjective level that is evaluated by customers (Snoj & Mumel, 2001). In terms of customers the perception of quality can therefore be very subjective because different clients have differing perceptions of the construct of quality of service (Hung-Chang, 2002). Providing the quality services should be an integral part of an integrated marketing.

## COMPANY PERFORMANCE

Performance consists of effectiveness which is understood as the fulfillment of the company objective, and efficiency which relates to efficiency in achieving the company objective. Both reflect the evaluation of past activities (Neely, 1998). The construct of the performance throughout history has not changed very much, but there have been changes of the indicators for measuring company performance. Nowadays more weight is contributed to KPIs (Key Performance Indicator) to measuring company performance. In assessing the performance of companies one must also take into account the interests of the stakeholders such as: customers, employees, business partners, etc., besides the measurement of financial and non-financial performance (Kaplan & Norton, 1996).

Financial performance is most often used for verifying company performance (Lehmann, 2004) and financial performance is defined as the return on sales. Some authors (Lane et al., 2001; Bunderson & Sutcliffe, 2003; Lyles & Salk, 2007) use for measuring company performance (1) division on the financial and non-financial performance, (2) in determining the performance we can take into account the comparison between years, comparison with leading competitors in the market, (3) one of the most important benchmarks is also the added value of each employee in the company, (4) some highlight objective criteria, such as financial statements, reports, databases, statistics, indicators, (5) the third say that financial indicators measured history, not the future (Bunderson & Sutcliffe, 2003).

The traditional way of measuring performance in today's hyper-competitive environment is no longer appropriate because it does not provide enough information for strategic decision-making, planning and control (Johnson & Kaplan, 1987). It is focused mainly on the past company events (Bakovnik, 2002) and the company management usually manipulates with them. Non-financial





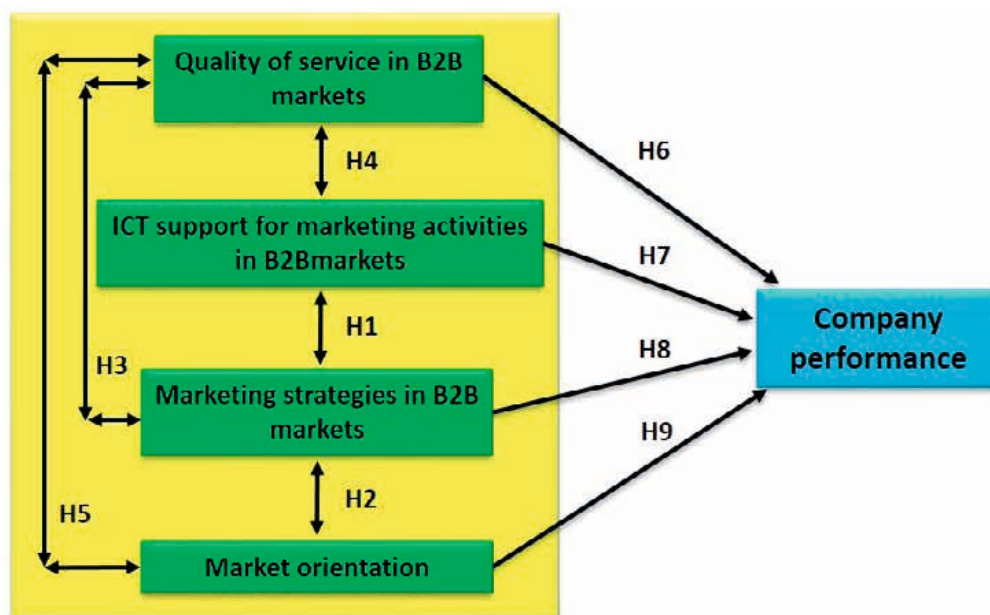
performance indicators are increasingly enforced (such as customer and employee satisfaction, intellectual capital, quality of products and / or services) and they use subjective criteria for assessing company performance.

For this reason, Kaplan and Norton (1992) introduce a balanced scorecard - BSC (Balanced Scorecard), which provides an excellent combination of non-financial and financial benchmarks. It is evidenced by various studies, that the Balanced Scorecard is one of the best criteria of non-financial and financial criteria for measuring the company success in a competitive environment (Hoque & James, 2000).

## CONCEPTUAL MODEL OF THE IMPACT OF SELECTED MARKETING RESOURCES OF COMPANIES OPERATING IN B2B MARKETS ON THE COMPANY PERFORMANCE

In the research model we connect constructs related to marketing activities of companies in B2B markets which affect the company performance through marketing strategies in B2B markets, ICT support for the implementation of marketing activities in B2B markets, market orientation of the company and the quality of services in B2B markets (Picture 1).

Picture 1: The scheme of research model



For the research we will design a new questionnaire, which will be formulated on the basis of structured and validated questionnaires by other authors. For construct marketing strategies in B2B markets we will use the questionnaire of Sarkees (2011), for construct ICT support for the implementation of marketing activities in B2B markets we will use the questionnaires of Sarkees (2011) and Škerlavaj et al. (2007), for construct market orientation of the company we will use the questionnaires of Singh & Koshy (2011) and Pantouvakis & Bouranta (2013), for construct the quality of services in B2B markets we will use the questionnaires of Ganessan (1994) and Cannon & Perrault (1999) and for the construct company performance we will use the questionnaires of Homburg & Pflesser (2000) and Škerlavaj et al. (2007).

For questions related to the content of the constructs in the questionnaire we will use the 7-step Likert scale. We believe that 7 point scale is adequate, because 7 levels gives better opportunity to assess the degree of agreement or disagreement with the given arguments as a 5 point scale.

The implementation of the marketing strategy should be supported by the appropriate ICT that allow the company to analyze market requirements and offer products or services tailored to the needs of customers (Roth & Jackson, 1995). On the B2B market companies have less business partners, but relations between business partners and customers are closer, they better use modern ICT tools and support and have a better exchange of information. ICT support is necessary for all business processes in companies as ICT support ensures proper flow of information for better control and management activities. Therefore, managers in a company should be aware of the continuous market and technological developments and their impact on marketing strategy, and how to accordingly adjust the strategy and activities. (Jenkins et al., 1997). Therefore, ICT support is of high importance for implementation of marketing strategy because it allows rapid flow of information to assist in decision making and adapting marketing strategies. On the basis of such considerations we put the following hypothesis:

*Hypothesis H1: Marketing strategies in B2B markets and ICT support for the implementation of marketing activities in B2B markets are interrelated.*

Market orientation of companies encourages the development of employees' skills and their involvement in the implementation of marketing strategy and activities. Grönroos (1990) believes that the market orientation depends on understanding the target activities of employees in the company, but notes that market orientation of employees in the company can be achieved through appropriate communication. Therefore, managers in a today's dynamic business environment have to ensure the adequate transmission of messages at organizational levels that employees can understand and properly implement objectives of the activity (Harkness, 1999).

The implementation of marketing strategy has a very large impact on the company's management and employees' attitudes towards marketing activities (Cruz, 2008). Companies in B2B markets quickly responses on market situation. Their market orientation with target marketing strategy can improve company performance and competitive position. In order to achieve the marketing strategy objectives, the contribution of employees is essential, therefore, we set following hypothesis

*Hypothesis H2: Marketing strategies in B2B markets and market orientation are interrelated.*

By designing a marketing strategy, a company have to check the requirements, desires and interests of customers, to be able to set and ensure their fulfilment with activities which are defined with marketing strategy (Oakland, 1989). It is very important that the quality of service depends on the planned marketing strategy. The management have to be able to ensure the quality execution of services (Krishnan et al., 1993). Vansina (1990) argues that there is a correlation between the quality of services and marketing strategies.

The marketing strategy of the company must ensure the quality of services in the B2B market, and this strategy must company adapt other processes, such as the planning and management of marketing activities (Chang et al., 2003). Marketing strategy cannot change the fact that an important condition for ensuring the quality of service is the quality execution of the services.



From the fore mentioned, it is necessary that activities of quality assurance services also include business partners, and therefore we have set the following hypothesis:

*Hypothesis H3: Marketing strategies in B2B markets and the quality of services in B2B markets are interrelated.*

Modern ICT support of marketing activities in B2B markets must be organized in such a way that provide high-quality execution of services. Information provided by modern ICT support in providing quality services in B2B markets can be divided into (i) general information (eg. company name, number of employees, turnover in the past year, ...), and (ii) information on sales and marketing activities whose implementation also depends on employees (eg. the market last year, revenue in the coming year, market share, major trends, marketing support, ...) (Wouters, 2004).

Modern ICT must ensure the availability and flow of information, ensuring quality implementation services and improving the quality of services to B2B. Also, the use of modern ICT allows the company to gain competitive advantage. Companies can, to ensure the quality of service, face with problems if they don't have adequate ICT support of marketing activities in B2B markets (Mullan et al., 2001). On this basis we present the following hypothesis:

*Hypothesis H4: ICT support for the implementation of marketing activities in B2B markets and the quality of services in B2B markets are interconnected.*

Focus on delivering quality services should apply across the companies and requires the support and involvement of all employees. Implementation of quality services is important to create good relationships with customers and meet their expectations (Madu & Madu, 2003). The quality of service depends on employee's satisfaction and their loyalty, productivity and production quality, and customer satisfaction and loyalty. With the marketing activities, the company have an impact on relations with customers and acquire relevant information about their needs and desires, and with this information they can impact on improving the quality of products and / or services (Zu et al., 2008). Market orientation of the company is also evident from the providing adequate quality and standards of products / services and promises given to customers by employees.

An important condition in providing quality services, is implementation of the activities and "product" without error, and that it is necessary in the activities of assurance quality of services involving a business partners. With the help of the appropriate communication we can manage the relationship between customers and company. Appropriate communication, as we have already observed, is justified by the market orientation of employees. From these statements therefore follows that the condition for quality service is a positive market orientation of employees, so we put the following hypothesis:

*Hypothesis H5: Market orientation and service quality in the B2B markets are interconnected.*

The existence of connection between the marketing strategies, quality of service and improving the company performance means, that there is a link between service quality and financial company performance (Fredericks et al., 2001).

In recent years, we were faced with the extraordinary development of ICT. The strategic objective of modern ICT support for management activities of the company is to improve efficiency and profitability, which affects the company performance (Bontis, 2002). According to Gunasekaran (1998), ICT took an important part in the management of marketing strategies and planned activities, and that enables control over the quality of the activities, which affects the company performance.

Managers are aware of the necessity for timely and appropriate performance measurement, because it plays a key role in the development of strategic plans and achieving goals (Ittner & Larcker, 1998). A well-designed system of performance measurement allows to monitor the progress in implementing the strategy and achieving strategic objectives (Indjejikian, 1999). Among the benchmarks is the most commonly used sales growth, as well as stock turnover, market share growth, cost reduction, profit ... (Hughes & Chafin, 1996).



Evaluation of the results are too focused on products, delivery and service, thereby neglecting the employees as a key dimension in the implementation of marketing activities and their contribution to the company success (Ulaga, 2003).

The primary objective of internal marketing is to create mutual understanding between different participants in exchange processes and it depends on the market orientation of employees and implementation of marketing activities (Snoj & Mumel, 1997). Business environment has a great influence on employees of the company, as it is up to them whether they are adapted to the wishes and expectations of customers, and to contribute with their work to increase market share and, consequently, the company performance (Škerlavaj & Dimovski, 2007). Therefore it is necessary to evaluate the company success with all of the company's operations relevant stakeholders, employees, providers of finance, customers, the community (Bakovnik, 2002). On this basis we put the following hypotheses related to the company performance:

*Hypothesis H6: Quality of service in B2B markets affect the company performance.*

*Hypothesis H7: ICT support for the implementation of marketing activities in B2B markets affect on the company performance.*

*Hypothesis H8: Marketing strategies in B2B markets affect the company performance.*

*Hypothesis H9: Company market orientation affects the company performance.*

## CONCLUSIONS

In this article we identify constructs associated with the marketing activities of companies in B2B markets. We associate till now unrelated constructs, whereby the individual constructs have a different impact on company performance. The aim of the article is to present a research model. With the model we would like to fill the gap on the interactions of selected marketing resources in B2B markets.

One of the most important limitations of the article is that it is hardly impossible to predict all directly and indirectly involved variables. We will compare data between Slovenia and European countries. Among the countries, there are differences in economic systems, demographic, psychographic, corporate and other characteristics (value system).

With the article we would like to highlight the important elements of marketing activities and explain the various options of using and developing marketing strategies and activities that help businesses achieve their goals. Various measures and activities bring different results, what depends on many factors, like market conditions, the abundance of competition, comprehend the business model. The article will deliver guidance to management, how and when to use what kind of marketing tool that will help to achieve desired objectives. These objectives are a lower cost of implementation activities, satisfied and loyal customers and high earning by sold unit of the product and / or services. At the same time, the companies can meet the expectations of employees and owners, who contribute to the company success.



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# Recent advances in information society and e-commerce development: comparison between EU and Serbia

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## *ABSTRACT*

The development of information society and e-commerce, as one of its most important segments, is recognized as one of the key factors affecting economic growth. European Union also recognize it as one of its priorities, and set a number of actions and targets in its development strategy. In this paper, the analysis of current stage of development and implementation of information society and e-commerce in the European Union, especially in Slovenia, and in Serbia, as a candidate country, is presented. The development is measured through a number of indicators, and their values are compared with targeted values. The results show that by most of the indicators, Slovenia still slightly lags behind EU average, while Serbia is far behind, except in the segment of the implementation of ICT in enterprises, where it is even above EU average and the most of European countries. Also, most of the targeted values of the indicators will be achieved on schedule.

*Keywords: information society, e-business, e-commerce, digital agenda, e-government*

## INTRODUCTION

The rapid development and application of information and communication technologies (ICT) in the last decades led to major changes in many spheres of our lives and these new technologies are often considered as one of the key factors of progress of modern society (EC, 2010a). Recognizing ICT as one of the major factors that affect the economic growth of the economy, European Union (EU), in its development strategy Europe 2020 (EC, 2010b), set the development of information society i.e. Digital Agenda for Europe as one of its seven flagship initiatives. The main goal of the Digital Agenda is to “deliver sustainable economic and social benefits from a digital single market based on fast and ultra-fast internet and interoperable applications” (EC, 2010a, p. 3). It stressed the concerns of EU, as it was lagging behind its industrial partners. For example, at that time every third European had never used the internet and Europe had only 1% penetration of fiber-based high-speed networks, compared to Japan (12%) and South Korea (15%). Also EU spending on ICT research and development were only about 40% of US levels (EC, 2010a). It was estimated that the full implementation of the Digital Agenda for Europe would increase GDP in Europe by 5 per cent over the next eight years by increasing investment in ICT, improving labor force ICT skills, enabling public sector innovation and by reforming the framework conditions for the internet economy (UN, 2014). Digital Agenda also presented necessary actions to be performed in order to fulfill key performance targets.

By signing of the Stabilization and Association Agreement with the European Union, which entered into force on 1 September 2013, Serbia has made a commitment to the process of accession to the EU to perform structural reforms and fulfill a number of objectives, some of which relate to the development of the information society. In order to harmonize its development with EU guidelines given in Digital Agenda and other related documents, Serbian government in 2010 adopted Strategy for Information Society development in the Republic of Serbia by 2020 (GRS, 2010), which defined the key objectives, principles and priorities of the development of the information society and as the primary objective set out actions that should be taken to its effective implementation and convergence to the EU average level of development by 2020. It also sets as the priorities of development: telecommunication infrastructure (especially access to high speed internet, to everyone); e-government; e-health; e-justice; ICT in education, science and culture; e-commerce; ICT in the business sector and information security.

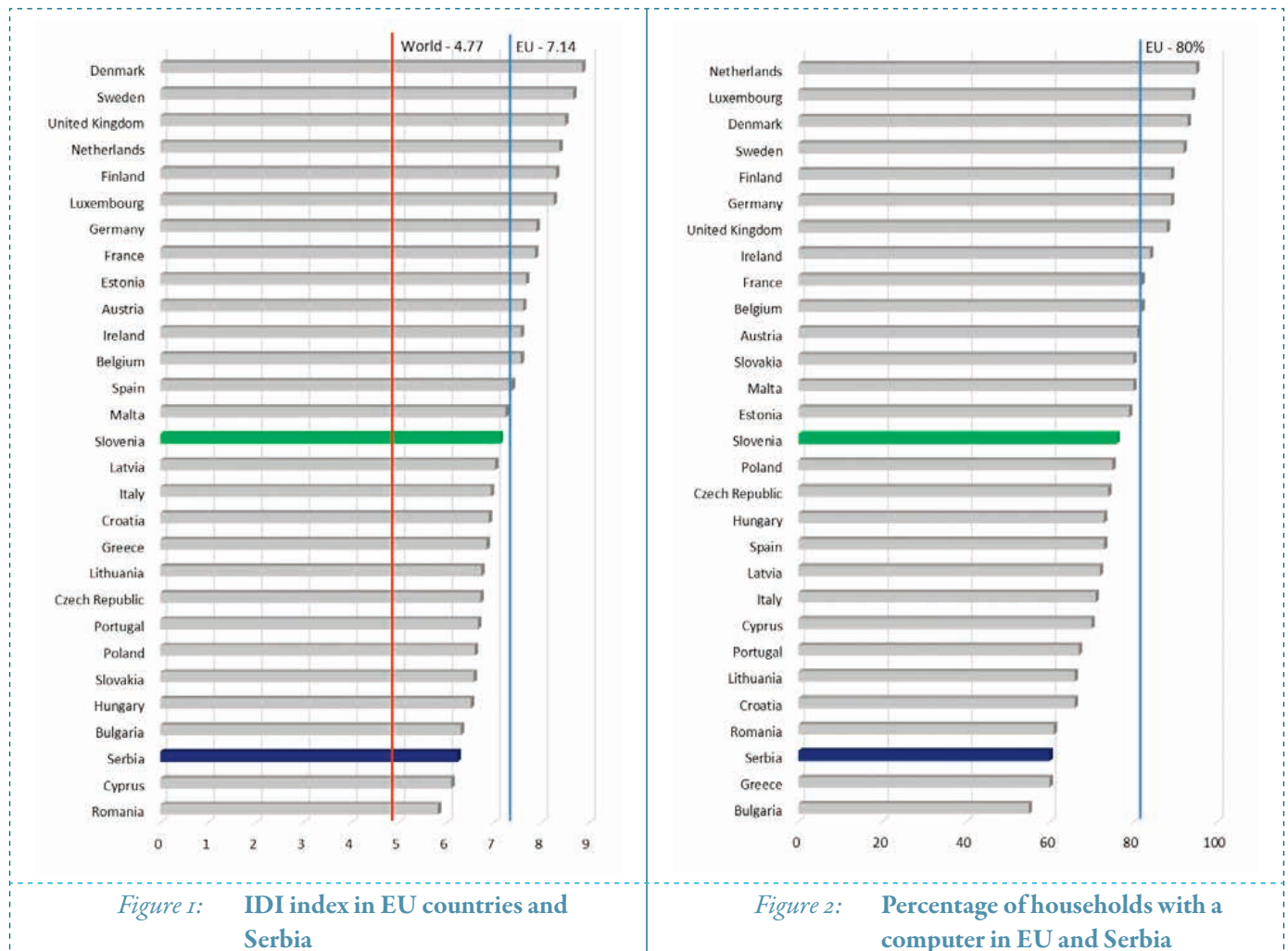
The objective of this paper is to analyze and compare the current status of development of information society, and one of its main segments - e-commerce, in the EU and Serbia. The paper is organized as follows: in the next Section the key indicators of information society development in EU and Serbia are presented and compared. The current stage of development of e-commerce, as one of the most important applications of ICT and potential growth engine, is presented in third Section. Finally, some concluding remarks are given.

## INDICATORS OF INFORMATION SOCIETY DEVELOPMENT IN EU AND SERBIA

There are several indicators that are usually used to measure the development stage of information society, but one of the most important and most popular is ICT Development Index (IDI), developed by International Telecommunication Union (ITU) in 2008 (ITU, 2014). It is a composite index that serves to monitor and compare developments in information and communication technologies across countries. IDI is composed of 11 indicators, grouped into one of three IDI components (sub-indices): ICT access (indicators like percentage of households with a computer or with internet access), ICT use (e.g. percentage of individuals



using the internet or fixed-broadband subscriptions) and ICT skills (e.g. adult literacy). Values of IDI index in 2013 for EU Member States and Serbia, as well as EU and world averages, are presented in Figure 1 (ITU, 2014).



The country with the highest IDI index is Denmark, which in 2013 overtook South Korea, the most developed in 2010, 2011 and 2012 (ITU, 2014). Serbia is above the world average, but below EU average, although it is better estimated than some EU countries, such as Cyprus and Romania, while Slovenia is very close to EU average. All European countries except Albania, have higher IDI index than the global average of 4.77. While Europe as a region in general has attained high levels of ICT development, there is a noticeable divide between the lower ranking Eastern and Southern European countries, on the one hand, and Western and Northern European countries that rank at the top of the regional and global IDI, on the other.

Another important indicator is availability of computers, as one of the most popular and useful devices. The percentage of households with a computer in EU and Serbia, in 2013, is presented in Figure 2 (Eurostat, 2015; SORS, 2015).

Again, Serbia is at the bottom of the list, and far from the average of EU countries, while Slovenia is quite close to EU average. One the other hand, data show that 100% of Serbian and 98% of Slovenian enterprises are owning and using computers, which is both above many EU members and its average of 97% (Eurostat, 2015; SORS, 2015).

Another important device in the field of ICT today is mobile phone. Besides for voice communication, contemporary smart phones are used for internet access and a number of services. Mobile penetration, or the number of mobile subscriptions per

100 inhabitants, globally is 96.4% (ITU, 2014), and it is much higher in developed countries (125.8%), where it already comes to saturation. Average mobile penetration in the EU is 132%, in Slovenia – 109% (Eurostat, 2015), whereas in Serbia it is 128% (RATEL, 2014), which is close to EU average, and ahead of many of its Member States.

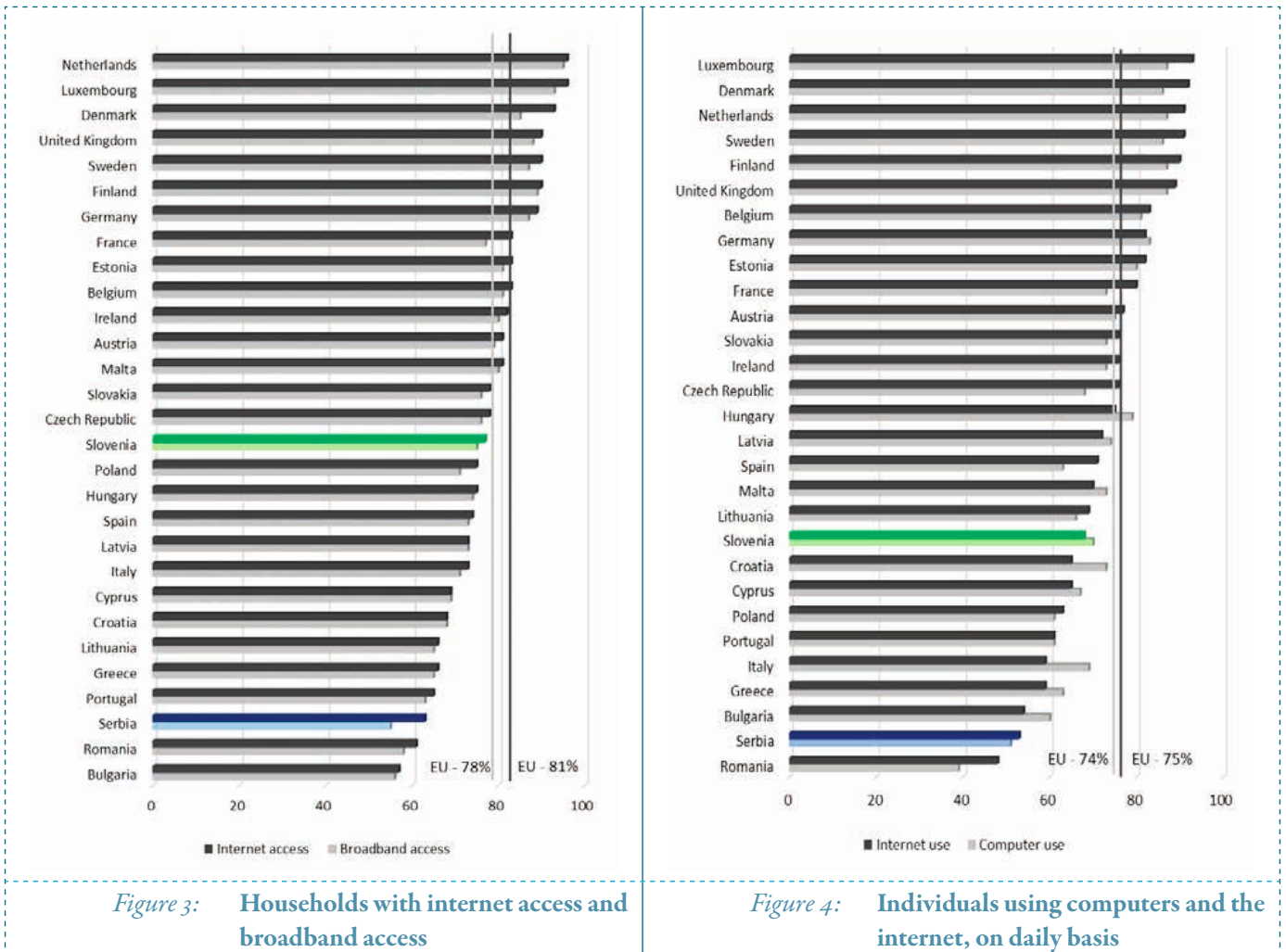
Internet is one of the basic communication channels today, and modern information society is based on the access to the internet and its services. Especially important is household access to the internet, by which all people, irrespective of age, gender, employment status, etc. or possible level of disability, can access the internet within the privacy and proximity of their own home (ITU, 2014). ITU estimates that today almost 3 billion people or 40% of world population is using internet, while this percentage in developed countries is about 80%. As part of its strategic plan for 2016-2019, International Telecommunication Union also set a number of global ICT goals and a set of measurable targets, like that by 2020, worldwide, 55% of households should have access to the internet and 60% of individuals should be using it (ITU, 2014). Both Slovenia and Serbia has already achieved both targets.

EU development strategy Europe 2020 (EC, 2010b) insists on development and accessibility to fast and ultra-fast internet with broadband access for all EU citizens by 2013, but also on access for all to much higher internet speeds (30 Mbps or above), and 50% or more of European households subscribing to internet connections above 100 Mbps, both by 2020. Digital Agenda for Europe (EC, 2010a) also set several ICT targets, including that regular use should be increased to 75% by 2015 (compared to 60% in 2009), and to halve the proportion of population that has never used the internet by 2015 (from 30% in 2009, to 15%).

The percentage of households with internet access (any sort) and broadband access in EU and Serbia, in 2014, is shown in Figure 3. As presented, Serbia has higher internet penetration only than Romania and Bulgaria, but it's the last on the list by broadband access, which is the basis of modern internet services. Slovenia again has much better results, but still below EU averages.

One of the most important indicators of information society development is the percentage of individuals who are using computers and internet on daily basis, presented in Figure 4 (Eurostat, 2015; SORS, 2015).





Again, Serbia is almost at the bottom of the list, significantly below the EU average, but still in front of some EU members, while Slovenia is very close to the averages of the European Union. As it can be seen, the European Union has already met the target of 75% of population using the internet, scheduled by Digital Agenda for 2015. In Serbia, still every third person has never used the internet (SORS, 2014), in Slovenia every fourth, while in the European Union on average it's 18%, which is close to targeted 15% by 2015 (Eurostat, 2015; EC, 2014a). Surprisingly, all 100% of enterprises in Serbia used computers in its operations and had the access to the internet (98% of them even had broadband access) (SORS, 2014), while in Slovenia 98% of companies were using computers and the internet, which is all above EU averages (Eurostat, 2015).

## ADVANCES IN ELECTRONIC COMMERCE DEVELOPMENT IN EU AND SERBIA

Electronic commerce (e-commerce) is often defined as the use of the internet and World Wide Web to perform digitally enabled commercial transactions between and among organizations and individuals (Laudon and Traver, 2015) and it includes “any transaction for the sale or purchase of goods and services conducted over computer networks by methods specifically designed for the purpose of receiving or placing of orders” (OECD, 2013). E-commerce is one of the fastest growing forms of commerce today, and is often considered as a significant potential for economic growth in each country. It offers a number of benefits: no time and space constraints i.e. 24/7 availability; access to the global market; wider product offer, not limited by the storage capacity of individual shops; lower operating costs, etc. E-commerce represents particularly significant potential for small and medium-sized enterprises (SMEs), because of its global reach and lower initial costs (Kalinic, 2014a). Mohapatra (2013) found that some of the main advantages of e-commerce for SMEs in developing countries are reduced information search costs and transactions costs (i.e., improving efficiency of operations-reducing time for payment, credit processing, and the like) and the possibility of automated distribution of information to specific target groups.

As one of the first official documents in the area of e-commerce, European Commission in 1997 adopted “A European Initiative in Electronic Commerce” (EC, 1997), whose aim was to encourage the vigorous growth of e-commerce in Europe, which would further increase the competitiveness of European companies in the world. The Initiative defined the initial rules and recommendations that EU countries used in defining its own legislation in the field of e-commerce. It was also stressed that the introduction of the single market and single currency creates exceptional opportunities for accelerated development of electronic commerce in the EU.

In its Directive on electronic commerce (EP, 2000) the European Parliament and the Council of the European Union stressed that further development of e-commerce within the information society offers significant employment opportunities in the EU, particularly in SMEs, and that it will stimulate economic growth and investments in innovation by European industry, enhancing its competitiveness.

One of the main objectives of the Directive was to create a legal framework and to ensure legal certainty and consumer confidence in e-commerce, as consumer trust is often found as one of the main obstacles to faster e-commerce adoption (Kalinic, 2014b). Although it is formally organized as a single market, the European Union in reality is still a patchwork of national online markets, which prevents its citizens to enjoy all the benefits of a digital single market (Diacon and Donici, 2011; EC, 2010a). It is necessary to eliminate all legal and administrative barriers and facilitate the use of electronic payment systems and efficient delivery systems in cross-border trade (FEB, 2013; Kalinic, 2014b).

E-commerce was also recognized as one of the priorities in the Strategy for Information Society development in the Republic of Serbia by 2020 (GRS, 2010) and Trade development strategy in Serbia, and as a legal basis for the development and operation of e-commerce, laws on Electronic Commerce; Electronic Signature; and Electronic Document were adopted.

Electronic commerce had a remarkable growth over the last decade. According to some estimates, its growth rate for several years was around 20% worldwide, with the expectations that it will remain in the double digits in the next few years, primarily due to rapidly increased number of online and mobile users in emerging markets, increases in m-commerce sales, and advancing shipping and payment options (eMarketer, 2014; Kalinic, 2014a). Despite the fact that estimated share of online goods in total retail of goods is only 4.2% globally (5.7% in Europe) (ECE, 2014), the total number of internet consumers in the world is already over one billion, or over 40% of internet users (ECE, 2014; eMarketer, 2013). Estimated share of the European internet economy in the GDP at 2.2%, a percentage that is set to double by 2016 and to triple by 2020 (ECE, 2014). As one of the main indicators





of e-commerce development, the percentage of citizens who traded via the internet over the past year, in the EU and Serbia, in 2014, is shown in Figure 5 (Eurostat, 2015; SORS, 2015).

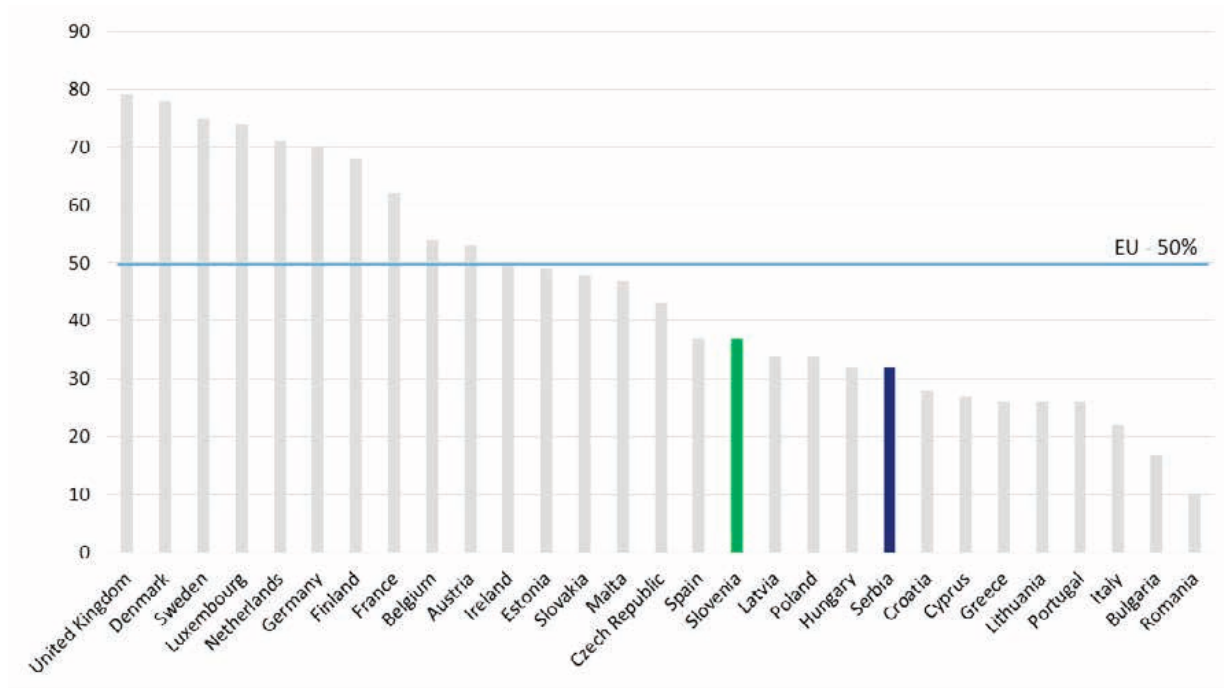


Figure 5: Individuals who purchased something over the internet in last 12 months, in 2014

It is obvious that Serbia and Slovenia are still below the EU average, but ahead of many EU countries. As of the European Union, first e-commerce target of the Digital Agenda for Europe (EC, 2010a), that 50% of citizens are buying online by 2015, was already accomplished in 2014. On the other hand, the second target, that 20% of them are buying cross-border online by 2015, is unlikely to be achieved. Cross-border trade in EU is growing at slower pace than expected, and in 2014 it reached only 15% (WSJ, 2015), and in Poland, for example, only 9% of internet consumers were buying outside of their country (EC, 2014). In March 2015, the European Commission launched a broad investigation into whether some well-known companies, like Amazon, are restricting cross-border trade in the EU (WSJ, 2015). By the way, three biggest online markets in EU: United Kingdom, Germany and France account for 61% of e-commerce sales in Europe (ECE, 2014).

There are several factors that hinder faster development of e-commerce, including underdeveloped internet infrastructure, legal framework, low income, low level of IT literacy, etc. (Kalinic, 2014a, Kalinic, 2014b). Strong linear correlation between internet penetration and GDP, on one side, and, e-commerce development (on consumer side) on other side, can be found (Kalinic, 2014a). The same stands for the relation between percentage of internet users, and e-commerce i.e. percentage of online shoppers, as it can be seen in Figure 6 (Eurostat, 2015; SORS, 2015).



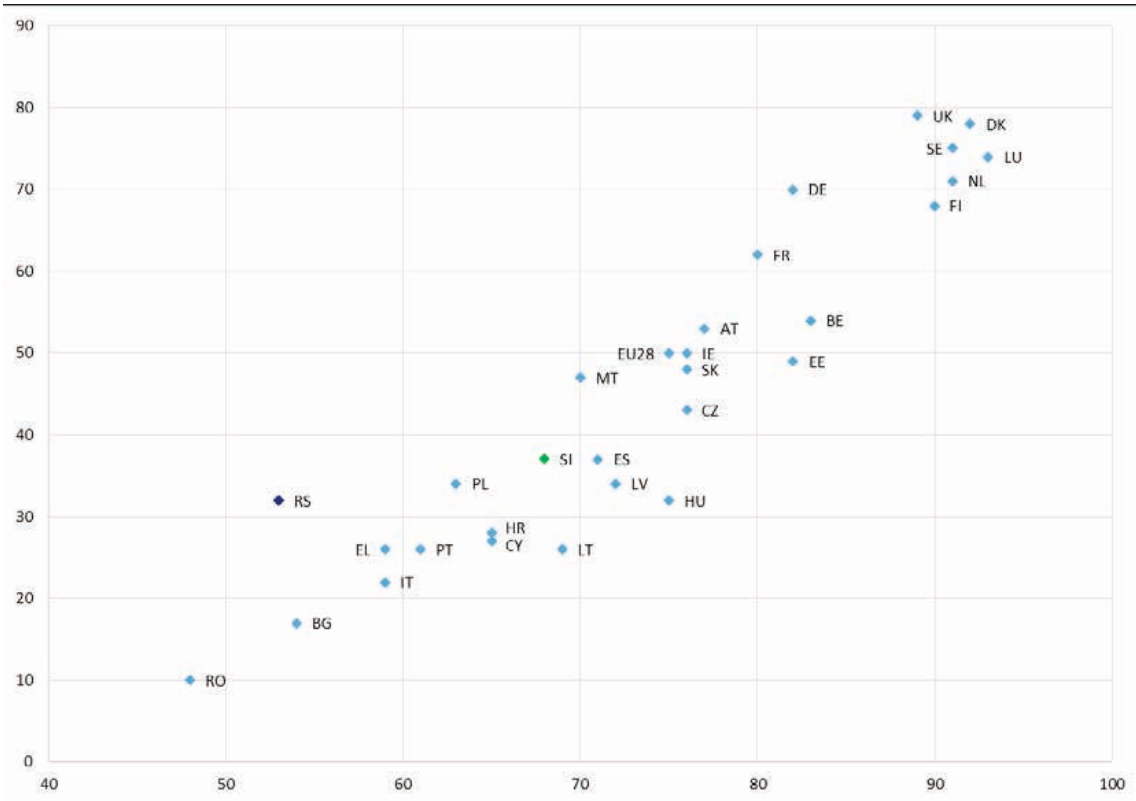


Figure 6: Relation between individuals who use the internet on daily basis (in %) and individuals who bought something online in last 12 months (in %)

It's interesting to stress that global financial crisis, started 2008, didn't have negative influence on e-commerce development. On the contrary, in the EU the e-commerce was developing at high rates, even during crisis years, while in Serbia it was stagnating (Figure 7) (Eurostat, 2015; SORS, 2015).

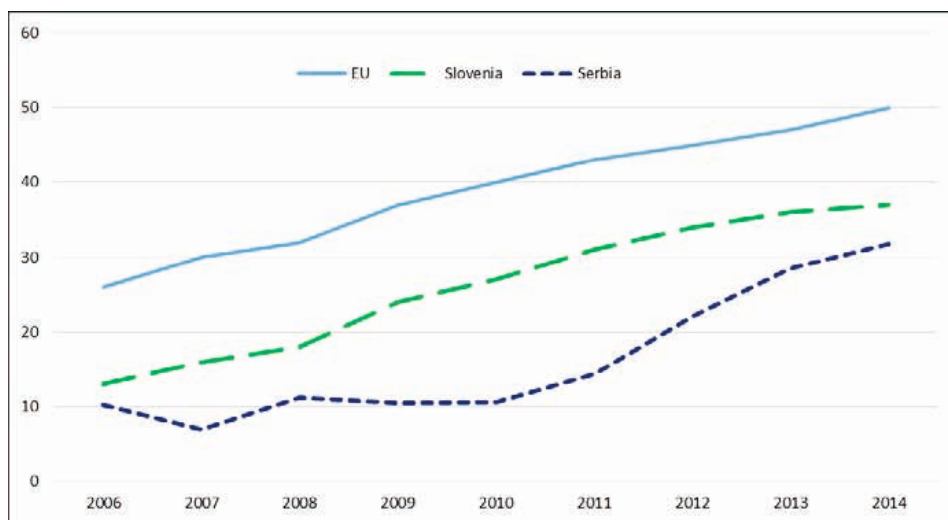


Figure 7: Individuals who purchased something over the internet in the last year (in %)



On the other side, the application of e-commerce in enterprises in the European Union is developing at very slow pace, with only 18% of companies using the internet as their sales channel, while 38% of them are purchasing online (but only 18% of enterprises are buying online for 1% or more of total purchases) (EC, 2014; Eurostat, 2015). If it continues at the same pace, not a single EU member will even come close to the third e-commerce target, defined by Digital Agenda for Europe, that 33% of SMEs are buying and selling online for at least 1% of turnover/total purchases, by 2015. Surprisingly, the situation in Serbia is much better, as, according to national statistics, 40% of companies are buying online, while 21% of them is receiving orders i.e. is selling via the internet (SORS, 2014).

Finally, the comparison of selected scaled key indicators of Information society development for the EU, Slovenia and Serbia is presented in Figure 8 (Eurostat, 2015; SORS, 2015).

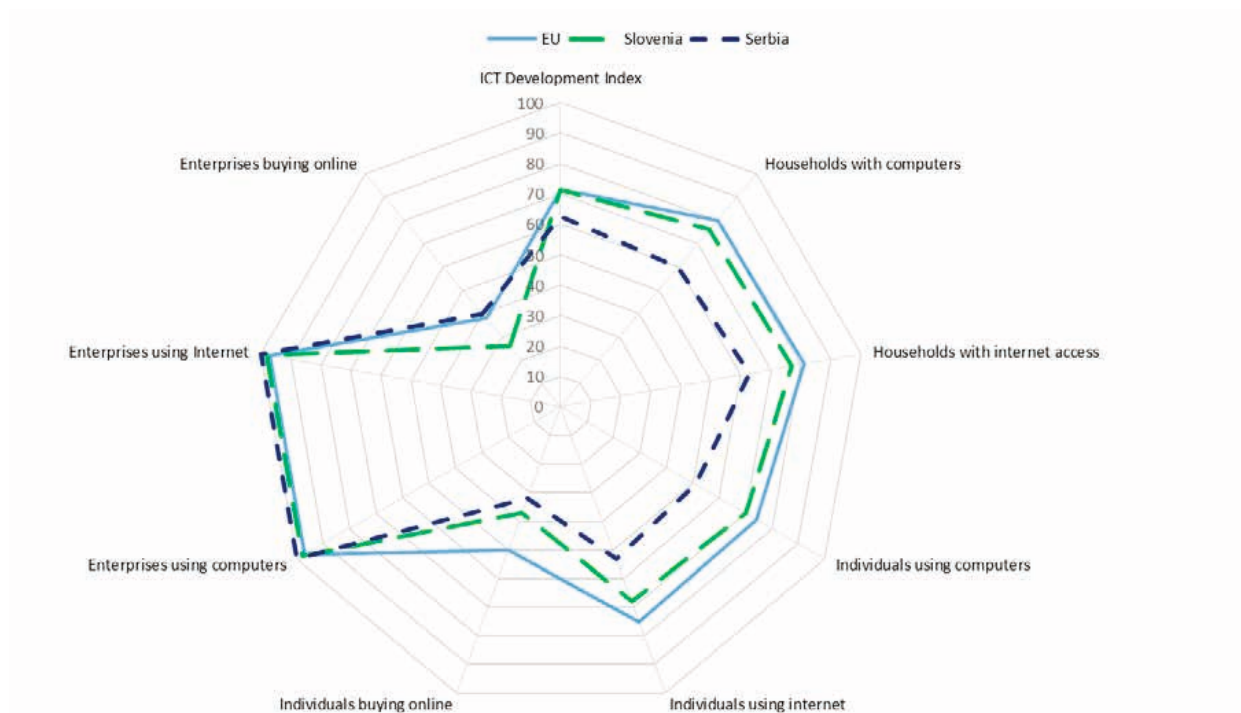


Figure 8: Comparison of key indicators of development

As it may be seen, Slovenia has the values of indicators related to households and individuals lower but close to EU averages, while Serbia is far behind. On the other hand, Serbian indicators related to enterprises are higher than Slovenian's and EU averages, while Slovenian's are close to EU averages.

## CONCLUSIONS

The implementation of new technologies, especially ICT, in many segments of our lives is one of the priorities of both, EU and Serbian development strategies. Analysis of the current state of development of the information society in the EU and Serbia, presented in the paper, shows that, by most of the indicators, Slovenia still slightly lags behind EU average, while Serbia is far behind. The only segment where Serbia shows good results, at least according to national survey statistics, is the implementation of ICT in enterprises, where it is even above EU average and the most of European countries.

As a part of development strategies, the EU and Serbia set a number of targets to be reached in the following years. As presented in the paper, it seems that the most of the targets are already achieved or they will be achieved on schedule, except targets related to cross-border trade and the implementation of e-commerce in SMEs. In order to foster further development of information society and e-commerce, several measures might be suggested: first, further investments in telecommunication infrastructure, especially ultra-high speed internet access, as a foundation for future development. Next, development and implementation of legal framework, compliant with the EU legislative, which would solve all issues related to e-commerce, especially problems related to cross-border trade and customer protection. Also, very important is permanent education of citizens i.e. improvement of their ITC skills, but also to inform them about all aspects of ICT implementation, including security issues, as the lack of trust was found as one of the most important obstacles to e-business acceptance.

## ACKNOWLEDGEMENT

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# Development of Social Entrepreneurial Intention Model

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## *ABSTRACT*

This paper develops a model of social entrepreneurial intention based on the theory of entrepreneurial event. New measurement scales are proposed for social entrepreneurial intention, perceived desirability of social entrepreneurship and perceived feasibility of social entrepreneurship. The constructs have satisfactory reliability and can be used in future research. Both the entrepreneurial intention model and the proposed social entrepreneurial intention model were tested on a multicultural sample of 512 respondents. As expected, the entrepreneurial intention model was confirmed. As for the social entrepreneurial intention model, the perceived desirability of social entrepreneurship and perceived feasibility of social entrepreneurship both statistically significantly positively influenced social entrepreneurship intention. However, the impact of propensity to act on social entrepreneurial intention was negative and statistically significant. Future research should focus on real social entrepreneurs' propensity to act and on the measurement of students' propensity to act before and after exposure to social entrepreneurship education.

*Key words: social entrepreneurial intention; entrepreneurial intention; propensity to act*

## INTRODUCTION

Models of entrepreneurial intention represent an attractive field of research due to important practical implications they have, assuming that intentions become behaviours. Studies on social entrepreneurial intention are rare because the field of social entrepreneurship is still young and only now gradually gaining importance. Naturally, since social entrepreneurship is a part of entrepreneurship, some theoretical concepts developed in entrepreneurship research are being adapted to the field of social entrepreneurship. This is also true for entrepreneurial intention. A better understanding of the development of social entrepreneurial intention could contribute to various strategies aimed at stimulating social entrepreneurship.

## LITERATURE REVIEW AND HYPOTHESES

A lot of research has been generated in pursuit of an answer to the question of who becomes an entrepreneur. The early research focused on the traits such as personality profiles and demographic characteristics, specifically looking for a certain trait that would differentiate entrepreneurs from employees. The findings of the studies following this approach were very heterogeneous due to (Llewellyn & Wilson, 2003) the usage of very small samples; the usage of narrow traits such as risk taking and the locus of control instead of wider personality traits integrated in a multidimensional model; the usage of different psychometric measures with unknown or unacceptable reliability and validity; and the inadequate reporting of results, especially the measures of central tendency and variation (Rauch & Frese, 2000).

In the 1980s, the trait approach was pushed aside to be replaced with certain ideas of social cognitive theory, adapted to the concept of entrepreneurial intention, which put the focus on perception. According to Bird (1988, p. 442): "Intentionality is a state of mind directing a person's attention (and therefore experience and action) toward a specific object (goal) or a path in order to achieve something (means)." The research community accepted two dominant entrepreneurial intention models: *the theory of planned behaviour* (Ajzen, 1991) and *the theory of entrepreneurial event* (Shapiro & Sokol, 1982). *The theory of planned behaviour* suggests the following three antecedents of intention: *attitudes toward the act*, *subjective norm* and *perceived behavioural control*. *Attitude toward the act* is a desirability of a certain behaviour which depends on the desirability and probability of this behaviour's outcomes (Mueller, 2011). *Subjective norm* refers to the perceived supportiveness of important others, weighted by the motivation to adapt to their wishes. *Perceived behavioural control* is a perception of how easy it would be for a person to perform a certain behaviour, taking into account one's own capabilities (Bandura, 1994) and the controllability of the behaviour itself.

*The theory of entrepreneurial event* recognizes three antecedents of entrepreneurial intention as well – *perceived desirability*, *propensity to act* and *perceived feasibility*. *Perceived desirability* is a construct that corresponds to the *attitude toward the act*, while *perceived feasibility* corresponds to the *perceived behavioural control* in the theory of planned behaviour. *Propensity to act* is a disposition to initiate and maintain goal-directed behaviours (Krueger & Brazeal, 1994).

Both theories, which have more similarities than differences between them, were tested many times on different samples and both exhibited great explanatory power, with *the theory of entrepreneurial event* having a slight advantage (Krueger et al., 2000) since subjective norm was not a significant predictor in every tested sample. Thus, it was decided to build our model of social entrepreneurial intention based on *the theory of entrepreneurial event*.





The idea was to test the models of entrepreneurial intention and social entrepreneurial intention on the same sample of respondents, controlling in this way for their demographic characteristics and trying to investigate whether there are some crucial differences. Thus the first set of hypotheses was set up in order to test the classic entrepreneurial intention model, as follows:

**H1a:** Perceived desirability of entrepreneurship has a positive impact on entrepreneurial intention

**H1b:** Propensity to act has a positive impact on entrepreneurial intention.

**H1c:** Perceived feasibility of entrepreneurship has a positive impact on entrepreneurial intention.

## SOCIAL ENTREPRENEURIAL INTENTION

Social entrepreneurship is entrepreneurship with a social mission. In other words, it is a new combination of resources (Shane, 2003) that generates a profit which is not appropriated by the owner, but rather invested in the realization of some social mission. It is a multidimensional concept characterized by social mission, innovativeness and earned income (Nicholls & Cho, 2006), and independent of the legal status of the organization in which it occurs (Austin, Stevenson & Wei-Skillern, 2006).

In 2006, Mair & Noboa proposed a social entrepreneurial intention model based on the theory of entrepreneurial event and the theory of planned behaviour. However, the model was not empirically tested. In the theoretical model they argued that in order to engage in social entrepreneurship, a person had to perceive social entrepreneurship as both desirable and feasible. For some people, social entrepreneurship might be desirable, but at the same time not quite feasible. They would need guidance in the process. On the other hand, some people might find it quite feasible, but not desirable in comparison to other available options.

Shapiro argues that one's propensity to act also supports the creation of intention, referring to a personal disposition to act on one's decisions and persist with a goal-directed behaviour (Krueger et al., 2000). The literature describes social entrepreneurs as very determined and persistent (Dees, 2001; Leadbeater, 1997), indicating that they may have high propensity to act. Applying the theory of entrepreneurial event to the field of social entrepreneurship, the following hypotheses are proposed:

**H2a:** Perceived desirability of social entrepreneurship has a positive impact on social entrepreneurial intention

**H2b:** Propensity to act has a positive impact on social entrepreneurial intention.

**H2c:** Perceived feasibility of social entrepreneurship has a positive impact on social entrepreneurial intention.

## METHODOLOGY

Primary data for both the entrepreneurial intention model and the social entrepreneurial intention model were collected from 6 different universities in 5 countries: Alpen-Adria-Universität Klagenfurt (Austria), University of Tuzla (Bosnia and Herzegovina), University of Zagreb (Croatia), J. J. Strossmayer University of Osijek (Croatia), University of Maribor (Slovenia) and Ss. Cyril and Methodius University in Skopje (The Former Yugoslav Republic of Macedonia). The questionnaire was simultaneously developed in Croatian and English, translated by bilingual professors at the said universities, where it was then administered under

voluntary and anonymous conditions. The sample consisted of business students because they have a good understanding of the business concepts mentioned in the questionnaire.

The measured variables included: entrepreneurial intention, perceived desirability of entrepreneurship, perceived feasibility of entrepreneurship, propensity to act, social entrepreneurial intention, perceived desirability of social entrepreneurship and perceived feasibility of social entrepreneurship. The variables of entrepreneurial intention, perceived desirability of entrepreneurship and perceived feasibility of entrepreneurship were measured using the instrument developed by Liñán & Chen (2009). Krueger (2009) emphasizes the importance of defining a timeframe when measuring entrepreneurial intention. Therefore, a time limitation of 10 years is present in all statements measuring students' intention. The statements that measure these constructs are presented in Table 1. Those statements were rated on a five-point Likert scale with the following range: 1 – I strongly disagree; 2 – I disagree; 3 – I neither agree, nor disagree; 4 – I agree; 5 – I strongly agree.

Relying on the work of Lepoutre et al. (2010), we used the propensity to act conceptualisation, based on the measure of the desirability of control (Burger, 1985; cited in Lepoutre et al., 2010). The statements were rated on a Likert scale as follows: 1 – I strongly disagree; 2 – I disagree; 3 – I neither agree, nor disagree; 4 – I agree; 5 – I strongly agree. The statements marked with the sign (-) were inversed and thus adequately recoded (1=5, 2=4, 3=3, 4=2, 5=1).

The major challenge was to develop appropriate measurement scales for the perceived desirability of social entrepreneurship, perceived feasibility of social entrepreneurship, and social entrepreneurial intention. The idea was not to use the term *social entrepreneurship*, since it may be perceived differently by the respondents in different countries. For example, Perić & Delić (2014) found that Croatian students of various disciplines considered social entrepreneurship to be a marginal activity of non-profit organizations or a part of corporate social responsibility. Thus, it was decided to capture the multidimensionality of social entrepreneurship by describing its main characteristics. First, social entrepreneurship requires an improvement or a solution to a specific social problem. Second, social ventures practice participative decision making. Third, they reinvest their profit in the process of solving a social problem. In the proposed model of social entrepreneurial intention, social entrepreneurial intention is defined as an intention to start an own business that would solve social problems, have participative decision making and reinvest its profit in the realization of some social mission. Perceived desirability of social entrepreneurship refers to one's personal inclination towards starting a business that would solve social problems, while perceived feasibility refers to a degree to which one perceives himself/herself capable of starting a business that would solve social problems. The items that measure these constructs in our social entrepreneurial intention model are presented in Table 1. The statements were rated on a five-point Likert scale with the following range: 1 – I strongly disagree; 2 – I disagree; 3 – I neither agree, nor disagree; 4 – I agree; 5 – I strongly agree.

Using a principal component regression analysis with varimax rotation, the constructs for the entrepreneurial intention model and for social entrepreneurial intention model were developed. The models were tested using a multiple regression analysis, with gender as a control variable. The reason for this is that gender differences have been noticed both in entrepreneurial (Hindle, Klyver & Jennings, 2009; Kedmenec, Tominc & Rebernik, 2014) and social entrepreneurial activities (Terjesen, Lepoutre, Justo & Bosma, 2009).



## RESULTS

After excluding the incomplete questionnaires, the sample consisted of 512 respondents, with 63% of women and an average age of 22.8 years (st. dev. 2.5). Table 1 shows the mean, standard deviation, median and interquartile range of each evaluated item. Their values range from 1 to 5.

On average, the results show that business students have entrepreneurial intentions and perceive entrepreneurship as desirable. However, averagely they do not perceive it as feasible. On average, the respondents do not have social entrepreneurial intentions. Although they perceive social entrepreneurship as desirable, they do not perceive it as feasible. Regarding their propensity to act, students on average assess that they have propensity to act.

Regarding the desirability of social entrepreneurship, the average values assigned to the three statements indicate that business students find social entrepreneurship desirable. However, the intensity of agreement is the lowest regarding the attractiveness of social entrepreneurship as a professional choice.

The first factor analysis encompassed the items measuring students' entrepreneurial intentions and social entrepreneurial intentions. The Kaiser-Meyer-Olkin measure of sampling adequacy amounted to 0.766 and confirmed the appropriateness of the data for factor analysis. Two factors were extracted, together explaining 71.866% of the variance. Regarding internal consistency, Cronbach's alpha (Nunnally, 1978) amounted to 0.804 for entrepreneurial intention and 0.795 for social entrepreneurial intention.

The second factor analysis encompassed the items measuring students' perceived desirability of entrepreneurship, perceived feasibility of entrepreneurs, propensity to act, perceived desirability of social entrepreneurship and perceived feasibility of social entrepreneurship. Two items from the propensity to act construct were removed from further analysis due to their loadings on two separate factors, including the corresponding statements: *I enjoy making my own decisions* and *I consider myself to be generally more capable of handling situations than others are*.

After these corrections, the Kaiser-Meyer-Olkin measure of sampling adequacy amounted to 0.793 and thus confirmed the appropriateness of the data for factor analysis. Five factors were extracted, together explaining 63.843% of the total variance. Cronbach's alpha coefficient of perceived desirability of entrepreneurship, perceived feasibility of entrepreneurs, propensity to act, perceived desirability of social entrepreneurship and perceived feasibility of social entrepreneurship amounted to 0.689, 0.653, 0.674, 0.746 and 0.667, respectively.



Table 1: Descriptive statistics

Construct with corresponding statements	Mean (St. dev.) Median (Interquartile range)
<b><i>Entrepreneurial intention</i></b>	
I have strongly resolved to initiate a business venture within the next 10 years.	3,6 (1,1) 4 (1)
I am prepared to do whatever is necessary to start and manage my own business venture within the next 10 years.	3,4 (1,2) 3 (1)
I have no entrepreneurial intentions within the next 10 years.	3,9 (1,2) 4 (1)
<b><i>Perceived desirability of entrepreneurship</i></b>	
For me, to be an entrepreneur holds more advantages than disadvantages.	3,7 (1,0) 4 (0)
I think it would be very cool to start my own company.	3,7 (1,1) 4 (1)
It would give me great pleasure to be an entrepreneur.	3,8 (0,9) 4 (1)
<b><i>Perceived feasibility of entrepreneurship</i></b>	
I know all about the practical details of starting a business.	2,7 (1,0) 3 (1)
It would be easy for me to start a company.	2,6 (1,0) 3 (0)
I would be able to gather the financial means and human resources necessary for starting a company.	3,2 (1,1) 3 (1)
<b><i>Propensity to act</i></b>	
I enjoy making my own decisions.	4,0 (0,9) 4 (1)
I would rather someone else take over the leadership role when I am involved in a group project. (-)	3,5 (1,2) 4 (0)
I would rather not have too much responsibility. (-)	3,5 (1,2) 4 (0)
I consider myself to be generally more capable of handling situations than others are.	3,5 (0,8) 3 (1)
I like to wait and see if someone else is going to solve a problem so that I do not have to be bothered with it. (-)	3,8 (1,0) 4 (1)
<b><i>Social entrepreneurial intention</i></b>	
Within the next 10 years, I would like to start a company whose primary goal would be the solving of some social problem that is particularly important to me, instead of profit maximization.	2,8 (1,2) 3 (1)
Within the next 10 years, I am going to start a company in which decisions are made by considering the needs of all those involved (the employees, local community, clients and others), even if that entails decreased profits.	2,9 (1,1) 3 (1)
Within the next 10 years, I intend to start a company that would invest most of its profits into solving a certain social problem of a particular interest to me (such as poverty, environmental pollution etc.)	2,8 (1,1) 3 (1)
<b><i>Perceived desirability of social entrepreneurship</i></b>	
It would bring me great pleasure to start a company whose mission would be to help the solving of social problems.	3,7 (1,1) 4 (2)
Starting a company that solves some social problem represents an attractive professional choice.	3,4 (1,0) 3 (1)



Owning a company that emphasizes its social mission has more advantages than disadvantages for me.	3.6 (1.0) 4 (1)
<b>Perceived feasibility of social entrepreneurship</b>	
I would be able to gather a team of capable people if I decided to start a company that would solve a particular social problem.	3.6 (0.9) 4 (1)
It would be easy for me to start and manage a company that solves a particular social problem.	2.9 (0.9) 3 (2)
I know all the possibilities for financing a company whose mission is to solve social problems.	2.7 (1.1) 3 (2)

The first regression model tested our entrepreneurial intention model. The assumptions of linearity, homoscedasticity, unusual points and the normality of residuals were met. The model is statistically significant,  $F(4, 466) = 113,128$  ( $Sig.=0.000$ ),  $adj. R^2 = 0.488$ . A summary of the results of regression analysis for the entrepreneurial intention model is given in Table 2. All entrepreneurial intention antecedents, including the perceived desirability of entrepreneurship, propensity to act and perceived feasibility of entrepreneurship had a statistically significant positive impact, confirming the hypotheses H1a, H1b and H1c. Gender was not statistically significant.

Table 2: Summary of Multiple Regression Analysis of Entrepreneurial Intention Model

Variable	B	SE <sub>B</sub>	β
Intercept	-.035	.042	
Perceived desirability of entrepreneurship	.480	.033	.481*
Propensity to act	.333	.033	.333*
Perceived feasibility of entrepreneurship	.367	.033	.369*
Gender	.103	.069	.050

Note. \*  $p < 0.05$ ; B = unstandardized regression coefficient; SEB = standard error of the coefficient; β = standardized coefficient

The second regression model tested the model of social entrepreneurial intention. The assumptions of linear multiple regression were met. The model is statistically significant,  $F(4, 466) = 109,368$  ( $Sig.=0.000$ ),  $adj. R^2 = .480$ . A summary of the regression analysis results for the social entrepreneurial intention model is given in Table 2. All three social entrepreneurial intention antecedents were statistically significant. However, the direction of the impact was surprising for propensity to act. While the perceived desirability of social entrepreneurship and perceived feasibility of social entrepreneurship have a statistically significant positive impact (confirming the hypotheses H2a and H2c), propensity to act has a statistically significant negative impact (rejecting the hypothesis H2b). However, the regression coefficient belonging to the propensity to act construct is the lowest of all the coefficients in the regression equation. Gender was not a statistically significant predictor in the model of social entrepreneurial intention.



**Table 3: Summary of Multiple Regression Analysis of Social Entrepreneurial Intention**

Variable	B	SE <sub>B</sub>	β
Intercept	-.039	.042	
Perceived desirability of social entrepreneurship	.606	.034	.606*
Propensity to act	-.100	.033	-.099*
Perceived feasibility of social entrepreneurship	.346	.034	.344*
Gender	.035	.071	.017

Note. \*  $p < 0.05$ ; B = unstandardized regression coefficient; SE<sub>B</sub> = standard error of the coefficient; β = standardized coefficient

Propensity to act was surprisingly not an antecedent of social entrepreneurial intention with a positive influence. This was an intriguing finding, requiring further, more detailed data analysis. It was decided to examine whether this relationship between the construct of propensity to act and the construct of social entrepreneurial intention was stable across different subsamples. This would be based on different combinations of entrepreneurial intention and social entrepreneurial intention of a single respondent. There are four possible combinations for each respondent. First, a respondent has neither entrepreneurial intention, nor social entrepreneurial intention. Second, a respondent has no entrepreneurial intention, but has social entrepreneurial intention. Third, a respondent has both entrepreneurial intention and social entrepreneurial intention. Fourth, a respondent has entrepreneurial intention, but has no social entrepreneurial intention.

Based on respondents' evaluations of entrepreneurial intention items, social entrepreneurial intention items, and propensity to act items, the scales of these constructs were created as arithmetic means of their corresponding items. Having an entrepreneurial intention was defined as having an entrepreneurial intention scale value higher than 3. Having a social entrepreneurial intention was defined as having a social entrepreneurial intention scale value higher than 3. According to this criterion, there were 190 respondents with social entrepreneurial intentions. When it comes to entrepreneurial intentions, this group was heterogeneous. Among those 190 respondents, 154 had entrepreneurial intentions, while the remaining 36 did not have entrepreneurial intentions. This means that 36 respondents did not perceive social entrepreneurship as part of entrepreneurship. What is more, the average propensity to act score of these respondents amounted to 3.1, while the average propensity to act score of the remaining respondents was statistically significantly higher ( $Sig=0.005$ ), amounting to 3.8.

The difference in the perception of social entrepreneurship appears to be a potential explanation of the negative relationship between the propensity to act and social entrepreneurial intention that exists at the level of the whole sample. In the next step, the model of social entrepreneurial intention was tested for different groups of respondents, depending on their particular combination of entrepreneurial intention and social entrepreneurial intention.

Again, the results (presented in Table 4) were surprising. For every group, the relation between students' propensity to act and social entrepreneurial intention was negative, and it was statistically significant for the group of respondents who perceived social entrepreneurship as entrepreneurship. This finally confirms the fact that propensity to act is not an antecedent of social entrepreneurial intention with a positive impact.



Table 4: Summary of Multiple Regression Analysis of Social Entrepreneurial Intention for 4 Subsamples

	Variable	B	SE <sub>B</sub>	$\beta$
1.noEI/noSEI	Intercept	-.480	.076	
	Perceived desirability of social entrepreneurship	.311	.058	.427*
	Propensity to act	-.080	.055	-.113
	Perceived feasibility of social entrepreneurship	.262	.060	.347*
	Gender	-.026	.121	-.017
2.noEI/yesSEI	Intercept	.899	.161	
	Perceived desirability of social entrepreneurship	.292	.115	.524*
	Propensity to act	-.074	.091	-.149
	Perceived feasibility of social entrepreneurship	.186	.112	.336*
	Gender	.135	.209	.120
3.yesEI/yesSEI	Intercept	.657	.065	
	Perceived desirability of social entrepreneurship	.354	.053	.504*
	Propensity to act	-.133	.040	-.241*
	Perceived feasibility of social entrepreneurship	.136	.044	.223*
	Gender	-.009	.085	-.008
4.yesEI/noSEI	Intercept	-.352	.057	
	Perceived desirability of social entrepreneurship	.413	.051	.526*
	Propensity to act	.051	.050	-.063
	Perceived feasibility of social entrepreneurship	.197	.042	.293*
	Gender	-.125	.091	-.090

Note. \*  $p < 0.05$ ; B = unstandardized regression coefficient; SE<sub>B</sub> = standard error of the coefficient;  $\beta$  = standardized coefficient, EI – entrepreneurial intention, SEI – social entrepreneurial intention, SED – perceived desirability of social entrepreneurship, PTA – propensity to act, SEF – perceived desirability of social entrepreneurship

## DISCUSSION AND CONCLUSION

In this paper, *the theory of entrepreneurial event* was applied to the field of social entrepreneurship. New measurement scales were developed for measuring social entrepreneurial intention, perceived desirability of social entrepreneurship and perceived feasibility of social entrepreneurship. The constructs have satisfactory reliability and can be used in future research.

Both the entrepreneurial intention model and the proposed social entrepreneurial intention model were tested on a multicultural sample. The entrepreneurial intention model was confirmed, as predicted. In the social entrepreneurial intention model, the perceived desirability of social entrepreneurship and perceived feasibility of social entrepreneurship both statistically significantly positively influenced social entrepreneurial intentions. However, the impact of propensity to act on social entrepreneurial intention was negative and statistically significant for the whole sample, whereas statistically non-significant for the three of the four tested subsamples. This could be connected to the fact that potential commercial entrepreneurs express higher levels of extroversion in



comparison with potential social entrepreneurs (Nga & Shamuganathan, 2010). There are several potential reasons why propensity to act did not influence social entrepreneurial intention positively.

Firstly, perhaps real social entrepreneurs have less propensity to act compared to commercial entrepreneurs. It is true that social entrepreneurs express high levels of agreeableness (Nga & Shamuganathan, 2010) and tend to use resources in a cooperative fashion (Dacin, Dacin & Matear, 2010) unlike commercial entrepreneurs, who attempt to set up competitive barriers. Of course, this is a proposition that requires further empirical research.

Secondly, the question is what was really measured. The measurement that was originally included in the questionnaire (Burger, 1985; cited in Lepoutre et al., 2010) showed a low level of reliability and so a number of items had to be removed. Finally, propensity to act was measured using only three statements, which were all negatively phrased. Thus, future research should examine the model of social entrepreneurial intention using other available propensity to act measures.

Thirdly, it is possible that the respondents perceived the action of *starting a business that solves a social problem* as an initiative that required less *propensity to act* compared to commercial entrepreneurship. Equating social entrepreneurship with non-profit humanitarian work or corporate social responsibility is a common mistake. Social entrepreneurship actually requires taking an initiative and establishing an entrepreneurial venture. Therefore, future studies could focus on testing the social entrepreneurial intention model on a sample of students before and after participating in social entrepreneurship education, which would most probably deepen their understanding of social entrepreneurship and its characteristics.



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# Efficient Management of Supply Chain in Achieving a Significant Competitive Advantage in the Market

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## *ABSTRACT*

The issue treated in this paper is the latest trends in the supply chains, due to new technological knowledge, as well as globalization. Instead of local and/or national focus, companies direct towards global market and changes in transport prices, communication, materials, human resources, etc., creating new ideas, parts or products, wherever the need emerges. In the decision-making process several things are taken into consideration: quality, delivery, cost and innovation, as well as the atmosphere that indicates mutual respect or disrespect to the supplier. Through a case study, the paper has explored the management with integrated supply chains, as a way of synchronizing the processes of their own company and suppliers and connects the flow of materials, services and information to the requirements of consumers.

The aim of this paper is to highlight the importance of supply chain management which has strategic significance and implications, in order to achieve a significant competitive advantage in the market.

The results of the comparable research can be used as a basis for significant decisions to improve overall customer satisfaction through integrated supply chains and its built-in tools.

*Keywords: integrated supply chains, functional supply markets, Warehouse Management System, special strategies, RFID technology*

## INTRODUCTION

Companies oriented toward consumers are skilled in building relationships, not only with the product but also with consumers. In modern management strategies, consumers are on the top and then, the second important people are those on the first line and then come middle managers. Furthermore, to support the people on the first line and serving the consumer, the top management is on the base, as a coordinator and corrector of middle managers. Nowadays with the development of digital technologies, quite informed consumers expect companies to ensure maximum enjoyment and pleasure. Consumers are those who estimate which trading companies will deliver the greatest value, whether the offer meets expectations, how does consumer satisfaction affect and the likelihood that consumers will re-purchase that product or service.

Such structural connections are realized through management supply chain, because it presents *design, maintenance and management operations of the process chain, in order to satisfy the final consumer*. Also, to create a strong and close relationship with consumers, companies, besides achieving the structural links, have to care about financial and social benefits.

Hence the role and importance of management of supply chain, because companies have success when they deliver quality or when products or services meet or exceed customer expectations. The orientation towards quality products and services, consumer satisfaction and company profitability are directly related. The research shows *high ratio between the relative quality of the product and company profitability*.

Overall consumer's satisfaction depends on the overall results (performance) of products or services that are offered and they are improved, modified, innovated through the management of supply chain and its built-in tools. *It is believed that more than 2/3 of ideas to promote the products or services originate from listening to consumers' complaints or praise that are conveyed through all intermediaries in the horizontal and vertical connection to the company*.

## SUPPLY CHAIN AS A CATALYST IN RELATIONS BETWEEN COMPANIES AND CONSUMERS

It is determined that the close relations occur between consumers and commercial enterprises when supply is important for the consumer and when there are obstacles in the procurement. On the other hand, it is determined that there is a greater vertical coordination between the seller and buyer which is necessary, but only when there is high uncertainty in the environment and when the investment is in the moderate range.

Business market whose main goal is to improve the efficiency and effectiveness, not only for companies as business suppliers, but also for consumers as a business customers, pays great attention to foster so called "*real business relations*" of all interrelated entities in the supply chain.



Modern business implies an existence of supply chain, which owns, despite flow of goods/services, flow of knowledge especially in prototypes, new products etc. Supply chain<sup>1</sup> is collaboration between manufacturers and suppliers or sub-suppliers, aiming at developing innovative products with improved performance and stability, effective and efficient sources of supply. It can be seen as a dynamic, open system of relations between suppliers of materials and/or services and companies that transform materials in products and/or services delivered to customers. Basically, here is treated the concept of large vertical coordination among partners to buy and sell, established on trust and strong long-term relations. In this context, supply chains play a great role because they treat activities of consumer satisfaction on one hand, and on the other they are constantly looking for new ways to add value to the business market, in order to facilitate the purchase of goods and services.

In business sector and its integral connection through a supply system, problems of the grey market become particularly evident. The grey market consists of brand name products, which are *redirected from* usual or authorized distribution channels in the country of origin of the product or service or across international borders. Unauthorized sales, counterfeit products, simulators strategies etc., are challenges of globalization and internationalization of all industrial branches. Unlawful behavior exists when vendors use number of activities, which is an unfair competition such as: bribing agents procurement; bribing brokers who affect sales of certain markets; bribing or espionage trade in order to obtain or use of trade secrets to competitors. Certain business practices include misleading or false advertising, pressure on consumers to buy unnecessary products or services, defects in quality, fake guarantees, permanent insistence of fraud, corruption, price setting and etc. Unfair competition is an illegal activity and it should not be a way to break into markets and products or services.

Therefore, respecting the legislation should be emphasis on human business conduct of integrated supply chains. Code of Ethics must continually innovate to respond to new situations, because thanks to the Internet the risk of the public is big. Corporate social responsibility is a part of the latest trends in management. Customers and consumers increasingly demand information about the integrated supply chains results, about its social responsibility and its environmental dimension.

In practice supply chains can be extremely complicated. Many enterprises have hundreds or even thousands of suppliers, suppliers have their sub-suppliers, thereby providing a supply chain. Enterprises can have their own distribution centers, retail outlets, can directly deliver goods etc. When you understand the complexity of the supply chain, it becomes clear and value chain.

## MODERN DEVELOPMENT AND MANAGEMENT OF INTEGRATED SUPPLY CHAINS

The supply chain starts from the assumption that the company's employees are able to integrate the functions and organization. Managing the flow of materials and services have been traditionally seen as a process performed in three sectors: procurement, sales and distribution.

In the area of procurement management process is aimed at providing the required quality and quantity of input factors. Sales management is the process of transformation, in order to ensure adequate products or services supply. Distribution is the process of managing the flow of materials from the producer to the consumer, from warehouses to retail, to the final consumer, including warehouse and transportation.

1 ... supply chain is a lifecycle process that supports physical, information, financial flows and flows of knowledge about the movement of goods and services from the supplier to the end consumer ..."; Ayers, BA, Supply Chain Management. Work: Design, Implementation, Partnership, Technology and Profits, Auerbach Publication, 2002, page 5





More detailed division of management activities with the flow of materials and services is performed in organizational units: arranging, purchasing, production, sales, implementation of orders, warehouse.

Within the negotiation the following things are performed: communication with business partners, compliance with the specifications of the required materials within the plants and organizational units in the company, sending a request for a quote, tenders, processing them, negotiation and monitoring contracts.

By this division, procurement has different treatment, actually it covers all things for making plans for procurement by type and time, preparation of orders, specifications, monitoring the quality and quantity of received goods or service, giving an order for daily deliveries etc.

In this section the EU countries, particularly Germany, the Ministry of Economy and Energy of Germany (BMWi), as a part of B2B project: "German initiative for finding suppliers in the Western Balkans", sends a call to the BiH companies in order to fit German customers with selected suppliers from the Western Balkans. This event will be held on 06.09.2015 in Munich, Germany, where interested companies will organize direct B2B matchmaking interviews with representatives of companies from the Western Balkans in the field of metal processing, production of furniture and furniture parts, textiles and leather processing, information and communication technologies, construction elements and organic products.

In this way, the initiators of the project want to actively contribute to increase economic activity in the region and strengthen the European idea. "Functional supply markets, reliable network of suppliers and efficient supply chain, which are essential for reducing the high foreign trade deficit in the countries of the region," Why Balkan market? Because today it provides great potential for customers from Germany and that the business opportunities in the future can be better utilized<sup>2</sup>.

Sales department issues deliver orders, process claims and objections of customers, gives daily orders for goods and services issues etc. The realization of orders includes the planning of transport from supplier to the enterprise, the enterprise to customers, issue orders for placement of primary goods and services, transport, reloading etc.

In this context, on the regional level, there are initiatives that will improve professional drivers qualifications and training systems. This multinational initiative ("SEED") of specialized organizations for road transport and professional training from nine countries in the region of Southeast Europe including Macedonia is by assistance of the European Union. Nine partners from professional training sector, Macedonia, Belgium, Bosnia and Herzegovina, Serbia, Croatia, France and Kosovo\* (UN resolution) have joined their resources in order to develop a training programme for drivers and instructors in the region with around 500,000 Euros provided by the European Commission<sup>3</sup> (co-financed by "Erasmus +programme" of the European Commission). The aim is to increase road safety by improving drivers education system (harmonized qualification) and to reduce the higher rate of traffic accidents casualties compared to other regions of the EU<sup>4</sup>. These measures in transport policy naturally play an important role in the modern supply chain, as they provide efficient distribution of almost all daily needs. If it is an imperative, to be ensured transport workers that will be 100% equipped with knowledge and skills, then it will provide safe and efficient services, entirely in accordance with the quality standards of the industry.

Warehouse involves activities regarding the receiving goods, sorting on a general principle, quality and quantity control, processing and finishing, packaging and so on. Warehousing is very important link in the supply chain, especially when there are dislocated plants and distribution centers. It is significant in companies whose core business is retail and wholesale.

2 <http://www.finbiz.ba>, March 2015

3 Announcement of SIZ "Macedonia traffic" AMERIT Macedonian organization involved in the project, Radio Free Macedonia, December 2014

4 "Global report on road safety in 2013", the World Health Organization





The advanced WMS (Warehouse Management System), and handheld mobile computers give a possibility storage and transport to become more efficient. These technologies are transforming traditional warehouses in modern and efficient. Based on these technologies, traders can build long-term logistics strategies to develop their businesses.

Software solutions of WMS<sup>5</sup>, as a part of supply chains, optimize operations in warehouses, allowing visibility of operations from order to delivery in real time. WMS provides automated and centralized standard procedures to carry out operations in the warehouse through bar codes and RFID-tags on one side as carriers of information and barcode readers, RFID-readers, mobile computers and wireless networks on the other side as devices that handle information. This system enables management of storage and transfer of goods in warehouses. The ultimate goal of the system is to minimize the cost and shorten the time to carry out the activities.

The effectiveness of WMS implementation is identified through: Elimination of errors and increased efficiency (Automatic identification-barcode or RFID) and software control procedures, (centralized system with a unique database of well-structured logistics data); Optimizing the use of space (Grouping of locations); Traceability (Monitoring of stored goods, level control inventory and utilization of warehouse space), which is confirmed by the Macedonian companies in the industry, distribution and retail.

WMS can be integrated with other systems such as: TMS (Transport Management System) - the system for managing transport, thereby receiving additional benefits: Planning loading vehicle; Planning delivery tours - merging orders for delivery in one tour for delivery according to tour and vehicle; Planning/alignment of vehicle capacity and tour; LIFO (Last In First Out - What enters last first goes out), a loading principle and therefore the order of selecting contractor from the buyer. WMS can be integrated with YMS (Yard Management System), a yard management system and management system of customer orders and orders to suppliers.

Integrated supply chain includes forecasting, inventory management, total planning, resource planning. The external part of the integrated chain is focused on relations, communications, interface enabled between the internal supply chain, customers and suppliers. Special attention at this stage is paid to the system of own security company, because the supply chain has been spreading throughout organization of the company. In the final stage, in some way, almost all processes in the business system are dependent on the supply chain. The problem at this stage of interaction occurs with the number of suppliers, the change in the selection of suppliers, limited budget for development of the chain etc. On one hand, the supply chain should be integrated, and on the other hand it has to remain open and flexible enough for entry of new suppliers. Moreover, another problem occurs when buyers and suppliers are not prepared for change and to leave the current way of working and applied processes<sup>6</sup>.

According to Cooper's model<sup>7</sup>, managing integrated supply chain consists of three main elements:

- supply chain structure (defining the key members of the supply chain, which will be connected to specific business processes);
- business processes (defining business processes types that will connect the individual members of the supply chain) and
- Control components (defining the level of integrated management for each business process).

<sup>5</sup> "Sigma-WB" is a specialized company for implementation of IT solutions and successful projects for renowned regional and Macedonian companies in the industry, distribution and retail.

<sup>6</sup> Ballou, R.,H.: Business Logistic/Supply Chain Management. Pearson Education International, V edition, Prentice-Hall, Inc., 2004

<sup>7</sup> Cooper, M.C., Lambert, D.M., Pagh, J.D. (1997). Supply chain management: more than a new name for logistics, *The International Journal of Logistics Management*, 8(1), 1-13



Each of these elements is directly related to the objectives of the supply chain, the degree of fulfillment of the requirements of the end users, taking into account key indicators (eng. Key performance indicators-KPI). Well-defined KPI<sup>8</sup> set can help identifying the technological backup for key logistics processes and their later use. One good example is SCOR (eng. Supply Chain Operations Reference)<sup>9</sup> model, as an integrated process of planning, procurement, production, delivery, feedback process (eng. Plan-P, Source-S, Make-M, Deliver-D, Return- R)<sup>10</sup>. In addition to these processes, a recent version of the SCOR model includes elements of group support (eng. Enable-E) for each of these processes. This group of elements is more focused on the flow of information on the relationship among members of the chain, in order to enable effective planning and implementation of the above key logistics processes.

Management of integrated supply chain should include changes in the individual management of business processes from one member of the chain to the integrated activities of several members of the core business processes of the supply chains.<sup>11</sup> Today, special strategies in supply chain management, dealing with research on effective integration of business processes in the supply chain in order to improve their overall performance, called re-design of business process (eng. Business process redesign)<sup>12</sup>. This strategy critically examines existing business policy, practices and procedures in the company, performs critical analysis and then make suggestions for redesigning of existing business processes. The redesign moving from strategic methods for radical changes or re-engineering of business processes (eng. Business process reengineering), to progressive methods of continuous process improvement (eng. Continuous process improvement)<sup>13</sup>, has already become a practice in the Balkan countries. Particularly in Macedonia and Serbia foreign companies and managers is working to transfer the experience of managing the supply chains of their parent companies (USSTILL, BFC LAFARGE, DIN-PHILIP MORISS, NELT, etc.)

Management of the supply chain sometimes differs in terms of external and internal parts of the chain. Control over the external chain is smaller. Therefore, enterprises plan their operations, so that there are almost always alternative flows, when it comes to a disorder or disruption of cooperation. External and internal termination of the supply chain, leads to harm that can be caused by unsuccessful cooperation between the external and internal chain or because of poorly performed operations in the internal chain. Due to the large number of participants (entities), as well as for the separate operations it would be unrealistic to expect that all interruptions in the chain could be removed. However, for managers are challenge to remove as many as they can interruptions.

Companies have invested in processes, tools and resources to achieve efficiency and effectiveness through their supply chains. Many of them have migrated to an integrated planning approach with the objective of increased service level, responsiveness and on-time full delivery while judiciously balancing working capital needs. However such integrated planning often starts with an assumption that supply chain networks are static and tends towards driving optimization around the same. Since supply chains themselves are dynamic, supply chain network design exercises attempt to make supply chains agile enough to address current changes and future uncertainties<sup>14</sup>. Internal Factors: Often, individual (function-specific) objectives and company objectives are

8 KPI compare efficiency and/or effectiveness of the system standard or target (desired) value

9 SCOR (eng. Supply Chain Operations Reference) - designed by the Supply Chain Council - an independent, non-profit international association of companies, organizations and professionals in the field of management of supply chains.

10 Kilibarda, M. J., Zecevic, S. M. (2008). Quality management in logistics. University of Belgrade, Faculty of Transport and Traffic

11 Vorst, van der J., Silva, da C.A., Trienekens, J.H. (2007). Agro-industrial supply chain management: concepts and applications. Food and agriculture organization of the United Nations, Rome, Italy.

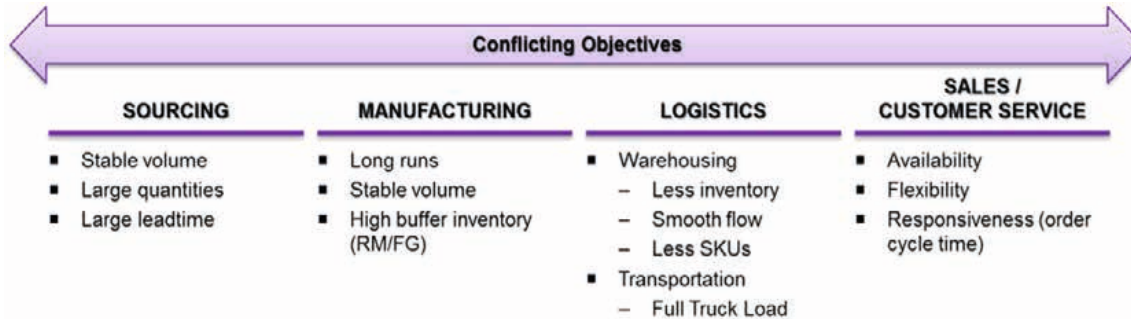
12 Aćimović, S., Understanding the Supply Chain, Economic Annals no 170, July 2006 - September 2006,

13 Cooper, M.C., Lambert, D.M., Pagh, J.D. (1997). Supply chain management: more than a new name for logistics, The International Journal of Logistics Management, 8(1), 1-13.

14 Supply chain network design can deliver significant reduction in supply chain costs and improvements in service levels by better aligning supply chain strategies. *Jul 8, 2013* L.N. Balaji, president, and Sandeep Kumar, vice president, ITC InfoTech, <http://www.industryweek.com/planning-amp-forecasting/how-reduce-costs-through-supply-chain-network-optimization>



not well defined or aligned. Different functions work on their individual objectives, often achieving local optimization while adversely impacting the overall supply chain performance.



Source: Supply chain network design can deliver significant reduction in supply chain costs and improvements in service levels by better aligning supply chain strategies. *Jul 8, 2013* Balaji, L.N., President, and Sandeep Kumar, vice president, ITC InfoTech

Companies have realized the importance of supply chain network design exercises but are still unable to make the best use of it. The challenge typically lies in selecting the right approach. Internal factors driving supply chain network design are focused on driving service delivery and working capital optimization across existing networks. On the other hand, external factors also drive significant structural changes. For example, proposed tax reforms would provide a completely new strategy around supply chain network design and move to changes such as larger and more centralized warehousing facilities. External Factors: Traditionally, businesses have established supply chains and different facilities across the network to gain tax benefits, trade concessions, labor arbitrage, capital subsidies, reduced logistics cost and customer proximity. Many of these factors can be impacted by political and economic policy changes, calling into question the relevance/optimality of the current supply network. In many cases, the impact of these changes is large enough to drive strategic structural supply chain changes.

One of the open questions in the integrated supply chain is the ability to store information. Information should provide data on trends and data from the past, especially in electronic operations. Very quickly shifts from one to another model but at the same time there is a need to preserve knowledge of the previous period. Eventually, a problem and challenge for managers is how to integrate different processes and technology systems to ensure flexibility in applied technology in every sense, i.e. the current technology in the company and one that will be revealed in the future, according to the company's work.

The latest business plan of the joint stock company for transport of Macedonian Railway Transport Skopje is intended to introduce new technologies in operation, with traditional (mostly "non-electronic" and "non-IT") processes need to be supplemented or completely replaced with appropriate fully automatic or semi-automatic process in one of the majors branch - shipping. Design of RFID technology has been introduced in tracking wagons and goods by the company, and other activities will be enhanced or improved by the introduction of new information technologies<sup>15</sup>. The role of the man - an operator in this process is minimal because it will run fully automatically. Currently, in our surrounding there is no company that has implemented RFID technology in this way and the same has great advantages in this segment of the supply chain: the mass transport, high security, relatively favorable transportation cost, energy efficiency, low reliance on shipping on weather conditions, low external costs for the protection of labor and environment, current reforms in the railways, employees in railway with their experience and knowledge. If this

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 15 The main element of RFID (Radio Frequency Identification) technology is RFID microchip (transponder tag) connected with flattened antenna, that together with the chip makes oscillating circuit, which responds to a particular frequency of which is tuned RFID reader. Micro chip and reader are so thin, so they can be sticked as a label of the object to be detected. This part is often called RFID tag. The tag broadcasts information via radio signals that are collected and with the help of computer further processed.



business plan finishes with foreign investors, interested in Macedonian railway transport, the introduction of RFID technology will provide quality rail transport throughout the Balkan region<sup>16</sup>, and the company will become a leader in the technological level of the logistics of transporting goods in this region and “starting point” and reference to other companies, which would introduce these or similar technologies.

Key advantages<sup>17</sup> of the management supply chain are:

1. *Better control of suppliers.* Control allows finding suppliers with most attractive prices and quality. It helps streamlining the negotiation process and contracting. Collaboration with suppliers should be secure and stable. Their choice should be based on their ability to (deliver fast, their ability to adapt to the needs or be linked to market demand). On the other hand, the consumer’s decision to be loyal or to leave the company does not depend on the meeting of consumers with the company-supplier that are very rare. Creating loyalty toward consumers is the heart of any business<sup>18</sup>.
2. *Reducing costs and savings in procurement.* Reducing costs and savings in procurement lead to productivity growth, reducing costs for employees in the procurement and reducing dependence on paper documents (requests for tender, respond to requests and placing orders). It also allows better positioning of the company in relation to the buyer. There are opportunities for giving quantity discounts or other benefits. Reducing costs and savings are reflected in the purchase price. It can be reduced to 15% -35%, depending on the level of integration of the chain.
3. *Better documentation.* The use of electronic channels significantly increases the accuracy of monitoring and recording transactions and improves the process of reporting and documenting. The accuracy is increased, orders are fulfilled and the appearance of undocumented purchase is eliminated by irresponsible workers.
4. *Increase working speed.* Management of supply chain helps employees in the department for procurement to atomize many routine activities in procurement, to eliminate redundant operations and increase efficiency in purchasing. Inventories should be positioned in the supply chain in a way that will allow fast delivery.

Today’s generic models of supply chains in the electronic environment (SCM-concept) provide all listed advantages, because it includes all the key elements of the architecture of supply chain and their mutual interactions. The purpose of electronic SCM-concept is an exchange of strategic and operational information through the entire supply chain using EDI technology, extranets and monitoring through appropriate information and communication technologies.

The essence of e-SCM-concept (Supply Chain Management) is based not only on maximizing the value of end-users, but also to all other indirect members in the supply chain that use the product/service as inputs for further production<sup>19</sup>. With SCM-concept, the objective is to minimize the potential impact of the “whip”, due to independent implementation of procurement, at any level in the supply chain and integration of all e-organizations in the supply chain, e-procurement, is e-commerce and e-collaboration with the application of modern ECT resources and high technology.

16 Cvetanovski, I.; Standards for identification of goods in transport, Technical Faculty of Bitola, Department of Traffic and Transportation, University, “St. Kliment Ohridski” Bitola, (2010), 58-62

17 “Management operations” Levi-Jaksic Dr.M Komazec Dr.gu, Megatrend University of Applied Sciences, Belgrade, 2003, p. 370-371.

18 Don Peppers & Martha Rogers “Customers Don’t Grow on Trees” Fast Company 2005

19 Rejman, Petrovic, D., Milanovic, I., Linic, Z., Architecture supply chains in the e-environment, Economic Horizons, Vol. 14, Issue 1, 37-50, Faculty of Economics, University of Kragujevac, January - April 2012.



The main interfaces that are exchanged between e-organization and e-procurement (suppliers) are procedures, planning, procurement, contracts with suppliers, verification of zero series, certificates, attests, audio recordings in the review process, orders in an organization, invoices suppliers, delivery, complaints, etc., while the main interfaces that are exchanged between e-organization and e-commerce (customers) are: procedures, procurement plans, contracts with customers, orders, invoices, e-procurement organization, regulations, orders for transportation, complaints etc. Synchronization of all these processes in the chain horizontally, includes e-collaboration, which provides a transparent way of planning the demand of all stakeholders.

In the future integrated supply chains will represent centers of excellence. Typically, they include multi-disciplinary teams that are responsible for solving a specific problem. The goal is business processes standardization and continuous education of key managers. In fact, center of excellence must have a strong executive sponsorship and reporting at a relatively high level within the management structure of the company<sup>20</sup>.

## CONCLUSIONS AND RADICAL TRENDS IN SUPPLY CHAINS

The changes that occur or will continue to happen in the world have not only an impact on trade, but also on the supply chains. Any changes in trade have a consistency and justification of changes, whose starting point, is the consumer.

“Race time” affects on change in consumer behavior and strongly affects on trade too, especially in the retail segment as its most sophisticated segment. Trade retail chains meet the customer’s needs by adjusting the staff employment in the busiest part of the day and the rest of the day. Retail strengthens also because of the concentration of knowledge and capital through the franchise system, retail entry liberalization, massiveness in performing retail etc. On the other hand the large retail operations lead to a tendency to establish a monopoly position, i.e. the spread of the global retail market. Competition through all these trends is an important adjustment factor, but also a promoting factor, because there are products with adequate quality in the trade. Therefore each country seeks to bring competition to prevent monopolistic tendency, especially when it refers to retail sector.

The contemporary buyer requires comfort in the process of purchasing products and services, but he is becoming less loyal to certain brands of products, and that is why retail is tempted to differentiate and manage with so called “package offer”. This brings a new quality management of supply chains, on which managers must respond. In terms of consumer, integrated supply chains pay more attention to the “original offer,” which results in a product category management. Within the supply chain system and its stake-holders, organizational units have great importance and they operate with a fixed product. Because they are focused on treatment and observation of only one product or service category, supply chains need to adapt and specialize in their functioning through strategic business units-SBU. It will be managed not only with one, but with more product brands in order to maximize sales and maximum flexibility in the formation of package offers. *Product segmentation* will become an essential element of almost every supply chain. Markets are constantly changing and businesses must respond to them - even if it means restructuring the company.

Innovations in supply chains can be observed by introducing self service, changes in the products, their package and way of packaging, introduction of electronic commerce. Technological progress will constantly work on modifying the electronic commerce, i.e. the development of new supply chains and those that will ensure efficiency and effectiveness. It will be provided with great information support. Modern information technology enables the development of another trend in supply chains of personal selling and home buying (telemarketing and sales by mail). There are different telecommunication sales techniques such as: strong

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<sup>20</sup> Streamlining Global Trade’ - Global Supply Chain conference Palo Alto, CA, July 17, 2014, Seven Best Practices for Supply Chains in 2025, By: Robert J. Bowman, Supply Chain Brain, August 04, 2014.





pressure technique, criticism of competitors, appropriate presentation and so on. Therefore, specialized commercial staffs such as brokers and agents who works for vendors and buyers.

The complexity of these processes of sales and changes in integrated supply chains have imposed existence of the most effective sellers or so called “*missionary sales force*” and brand recognition and the name of the manufacturer, the formulation and implementation of the package offer (“*system sales*”), as a prerequisite for loyalty and willingness of consumers to notice the change.

*Big data analysis and analytics.* Until now, most organizations have relied on structured data, (such as purchase orders, inventory levels and customer returns). In the future there will be addition of unstructured data from external sources (such as books, articles, blogs, surveys, and social media). These files, which make up 90% of all business information, can have a huge impact on supply chains. Surfing the environment is made by analytics to the rescue, in order to extract meaningful data. Such analyzes should provide a realistic view of customer needs and trends, especially for new market areas and new products. Quantitative analysis of risk management, possess advanced techniques and tools for risk management in the supply chain that can model and predict even the least rare catastrophic events. Good patent risk management can help to protect companies from costly wars and patent trolls, because IP theft and piracy will mark a growing trend.

In recent years the companies being involved in the supply chain become smarter, because they have a better understanding of the hidden costs of outsourcing and risks, such as theft of intellectual property. Moreover, it is often wiser to locate at least one part of a production facility closer to home, to keep the core in the parent company or with trusted local partners.

Such radical changes and trends in the supply chains are ultimately aimed at creating greater interdependence between global businesses and their many partners.



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# Intelligent Agents as Facilitators of Increased Customers' Satisfaction in E-commerce

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## *ABSTRACT*

With rapid growth of the number of Internet users, e-commerce (electronic commerce) has gained its share of the market. By providing customers access to a wide variety of products all over the world e-commerce has become one of the largest markets in the world. With a rapid growth of products and services and a growing number of various webpages, finding the right product, service or information has become very challenging and means that enable capturing of customers' attention and increasing their satisfaction have come into focus. In this paper an application of intelligent agents in e-commerce is elaborated and discussed along with BIA (Buyer's Intelligent Agent/Assistant), a new developed intelligent agent that takes a role of intelligent assistant that is aimed at increasing customers' satisfaction.

*Keywords: intelligent agent, intelligent assistant, e-commerce, customers, satisfaction*

## INTRODUCTION

E-commerce has been boosted by rapid development of Internet. Its trading volume was 545 billion dollars at the end of 2012 (Karabey & Adar, 2014). E-commerce can be performed between business subjects (B2B – Business-To-Business), between some business system and its customers (B2C – Business-To-Customer) or even between customers themselves (C2C – Customer-To-Customer). There are three important aspects that need to be considered when talking about successful e-commerce: the provision of electronic information, electronic relationships, and electronic transactions (Hasanain & Albidewi, 2014). The provision of electronic information refers to the need to find proper information and present it in a proper form. Electronic relationships refer to creating a community that includes customers and the ones that take care of the customers' interests. Finally, electronic transactions refer to the ability to provide a safe and easy way of electronic payment. Internet mass usage has made achieving all mentioned aspects more important than ever and it has also resulted in vast possibilities for e-commerce which has gone through rapid and exponential development (Kerr, 1999). This trend has however left consumers with a wide variety of products and services making finding the right product or service a challenging task since new business systems have been making their entrance into global market on a daily basis offering their new products and services. Conducting a business just on a local scale has for many companies become a thing of the past. Making their appearance on a global electronic Internet market is something that most of new companies find to be a prerequisite of their success. However, it is harder and harder to find one's position on the Internet because of a large number of websites already present online and this consequently makes many products or services hard to find for their potential customers which influences customers' satisfaction. One of possible solutions for this problem is the usage of intelligent agents that will perform certain activities of searching and filtering for the customers. These intelligent agents are also called intelligent software agents and they can be defined as pieces of software that are able to do some actions and tasks that humans can do by themselves but they often lack time to do it (Janca, 1995).

## INTELLIGENT AGENTS

Intelligent agents have been proposed as a promising solution for performing of various routine tasks since they are more accurate in these tasks than human agents (Boy & Gruber, 1990) and can relieve human agents from these kind of tasks and can also enable them to focus on those aspects that require problem-solving skills (Myers et al., 2007). Simply said, intelligent agents perform some desired tasks of human agents instead of them and are able to act autonomously in many aspects but they are also able to communicate with their environment and act upon changes in this environment (Rudowsky, 2004) as can be seen in Figure 1 (Russell & Norvig, 1995).



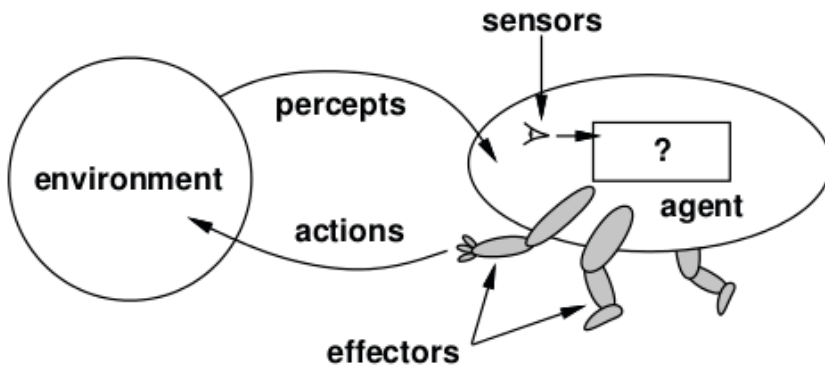


Figure 1: Intelligent agent

There are many different kinds of intelligent agents that differ in the way they function or in the area of use that they are designed for. Generally, the intelligent agents' agenthood is measured by two different dimensions: agency and intelligence (Fingar, 1998). Agency can be defined as a level of authority and autonomy that intelligent agent possesses when it performs interaction with its users and other intelligent agents in its environment. Intelligence can be defined as the level of reasoning and learned behavior (Gilbert et al., 1996). This refers to agent's ability to understand user's instructions and desires in order to successfully perform some user task. For example, agent can accept the user input, analyze and understand this input and return some desired results, but it can also learn about the user and adapt to its needs in time. There are many classifications of intelligent agents (Nwana, 1996; Franklin & Graesser, 1997). One of more known is that of Franklin & Graesser that have given their taxonomy of intelligent agents which is shown in Table 1 (Franklin & Graesser, 1997).

Table 1: Taxonomy of intelligent agents

Property	Other names	Meaning
reactive	(sensing and acting)	responds in a timely fashion to changes in the environment
autonomous		exercises control over its own actions
goal-oriented	pro-active purposeful	does not simply act in response to the environment
temporally continuous		is a continuously running process
communicative	socially able	communicates with other agents, perhaps including people
learning	adaptive	changes its behavior based on its previous experience
mobile		able to transport itself from one machine to another
flexible		actions are not scripted
character		believable "personality" and emotional state

Intelligent agents are beside in e-commerce also found in many different areas such as (Jennings, & Wooldridge, 1998):

- Process Control
- Manufacturing
- Air Traffic Control
- Information Management

- Business Process Management
- Patient Monitoring
- Health Care
- Games
- Interactive Theater and Cinema
- Education

## E-COMMERCE AND ARTIFICIAL INTELLIGENCE

In e-commerce there are several stages of a sale transaction in which intelligent agents that implement various artificial intelligence aspects can be used to enhance the shopping experience of customers (Hasanain & Albidewi, 2014):

- Identification: At this level the customers are made aware of the need, which is not met by providing them with information on the product.
- Brokering which takes two forms:
  - Product brokering: These are agents systems that lower consumers' search costs when deciding which products best meet their needs.
  - Merchant brokering: This stage provides customers with specific merchant alternatives to assist them in determining where to buy from.
- Negotiation: At this stage the customer and the agent agree on price and other transactional terms and conditions. This application helps to eliminate barriers experienced in real world negotiation.
- Payment and delivery: After negotiation is successful, the client is given the available payment and delivery options and decides which course to take.
- Product service and evaluation: At this stage the customer is provided with a service and the opportunity to evaluate his satisfaction and experience of the buying process.

There are various examples of intelligent agents in e-commerce and they mostly include different filtering or recommendation systems. Some of examples that have emerged throughout the years include (Kerr, 1999; Hamilton & Garber, 1997; Cunningham et al., 2001; Garcia, Lopes, & Seidel, 2001):

- PersonaLogic - performs product brokering by allowing users to define a set of filtering attributes on desired product list
- Firefly - recommends products based on opinions of customers with similar taste



- BargainFinder - performs merchant brokering and finds the best bargain for some chosen product
- Jango - provides more advanced merchant brokering
- AuctionBot - online auction systems where the highest bid wins with the option to configure one's own software agent to perform bidding
- Kasbah - a merchant brokering system that enables its users to create their own agents that will seek products as well as selling agents and bid for the users in order to achieve optimal goal according to given price and time constraints
- Tete-a-Tete (T@T) - a negotiating agent with cooperative, not competitive style (Rosenschein & Zlotkin, 1994), which offers a possibility of negotiation over a wider set of terms such as delivery deadlines, warranties and other terms
- WEBSSELL - an intelligent agent for aiding users in web sales
- AgILE - an e-auction model that incorporates intelligent agents used for enhancing and assisting in buying and selling tasks of transaction stages

When observing intelligent agents application it can be concluded that most of usage of these kind of agents can be found in B2C (Business-To-Customers) transactions (Prasad, 2001) although B2B (Business-To-Business) counts for most of e-commerce market (Prasad, 2003). Still, B2C (Business-To-Customer) market is also growing in exponential rate as is shown in Table 2 (Karabey & Adar, 2014).

*Table 2: The change of B2C E-commerce sales worldwide in billions of dollars with projection for 2016*

	2012	2013	2014	2015	2016
Asia-Pacific	\$301,2	\$383,9	\$525,2	\$681,2	\$855,7
North America	\$379,8	\$431,0	\$482,6	\$538,3	\$597,9
Western Europe	\$277,5	\$312,0	\$347,4	\$382,7	\$414,2
Central & Eastern Europe	\$41,5	\$49,5	\$58,0	\$64,4	\$68,9
Latin America	\$37,6	\$48,1	\$57,7	\$64,9	\$70,6
Middle East & Africa	\$20,6	\$27,0	\$33,8	\$39,6	\$45,5
Worldwide	\$1.058,2	\$1.251,4	\$1.504,6	\$1.771,0	\$2.052,7

When considering intelligent agents that are designed for use in electronic commerce several types of intelligent agents can be identified (Griggs & Wild, 2003):

- Find and retrieve agents
- User agents
- Monitor surveillance agents
- Data mining agents
- Knowbots



Find and retrieve agents are the most widely used intelligent agents when talking about e-commerce. These kinds of agents are designed to search the Internet or some other network in order to find some information that the user has requested. An example of this kind of agent is BargainFinder that searches for the lowest price of some selected product. User agents are intelligent agents designed to aid users in some specific task that involves computers such as e-mail checking or scheduling. This kind of agents are able to act upon user's preference, for example they can sort incoming e-mails by priority because that is the most common way of sorting that has been used in most cases by the user or they can identify and act upon receiving an e-mail with some special offers that includes user's products or services of interest. Monitoring and surveillance agents are intelligent agents that are designed to conduct repetitive actions such as for example monitoring some auctions and sending reports on changes of the price or monitoring of certain websites and alerting the user about some special offers for selected products or services of interest. Data mining agents are intelligent agents that are used to track and analyze certain data that shows certain changes in different trends, for example in market conditions, which allows its users to react in time and change their strategies. Knowbots are highly mobile software agents that have the ability to add value to the process through improved buyer/seller mediation, enhanced information access, transaction cost reduction, and increased transaction speed (Griggs & Wild, 2003).

One of the terms that has also become known in the world of artificial intelligence is intelligent assistant. Intelligent assistant (or intelligent assistant system) is a type of intelligent agent which is designed to aid user in using of some machine or artificial system as is shown in Figure 2 (Boy & Gruber, 1990).

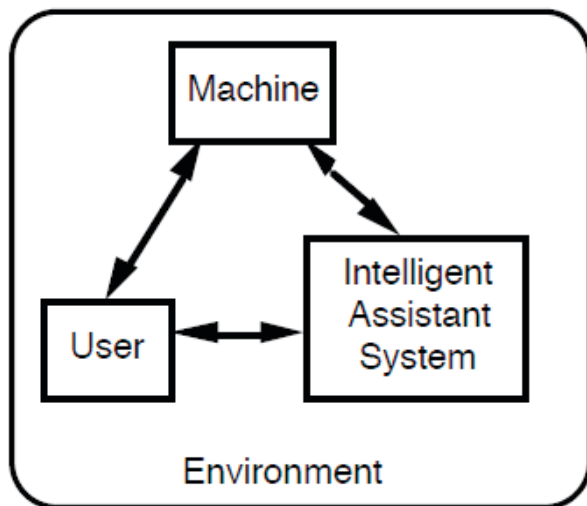


Figure 2: Role of intelligent assistant system

## FACILITATING CUSTOMERS' SATISFACTION

As mentioned, a vast range of different products and services that are available on e-commerce market make finding the right one hard and challenging task for customers. In order to try to increase customers' satisfaction and make process of searching and finding the information about the products/services more interesting, a new intelligent agent named BIA (Buyer's Intelligent Agent/Assistant) is proposed. Intelligent agent and intelligent assistant are in many cases the same technology so both names can be used. An example of BIA is shown in Figure 3.





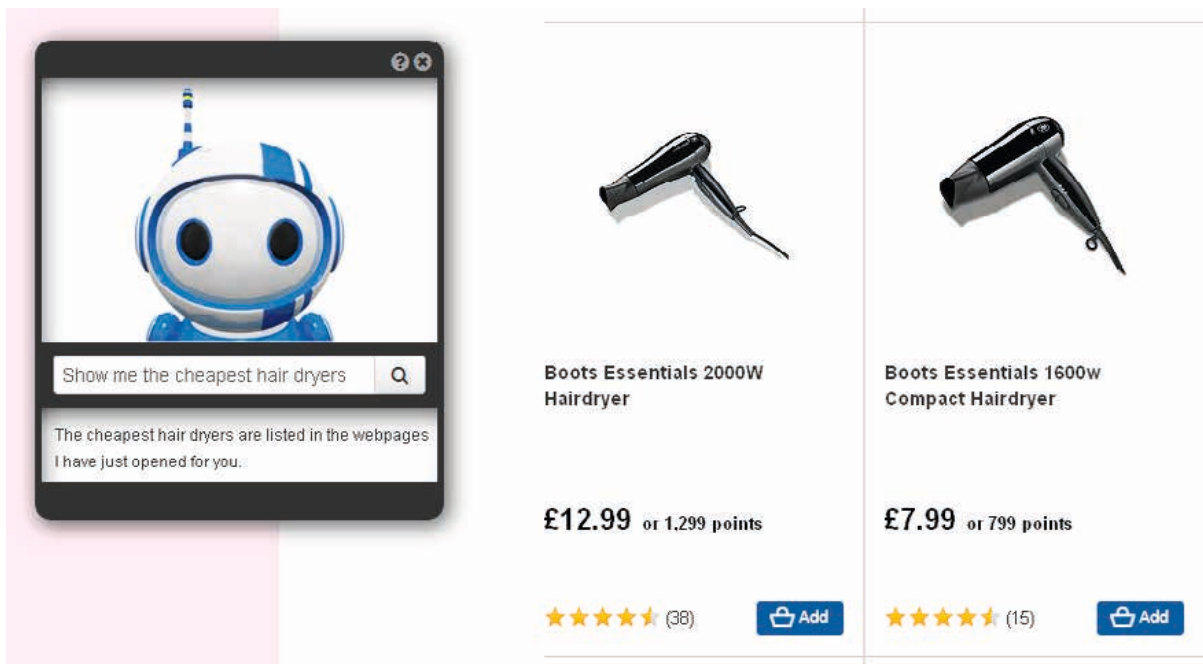


Figure 3: An example of BIA usage

BIA can process natural language and it enables its users to communicate with it in informally and well-known manner. In order to make BIA even more personalized an avatar has been created to represent BIA. BIA appears as an integral part of a webpage that sells some products or offers some services and is able to give information about the products or services and to open a page that consists of several products/services or of description of some particular product/service. Several examples of queries that can be given to BIA are:

- I want a hair drier.
- Are there any good microwaves ovens?
- What is the cheapest mirror?

BIA is not sensitive to various forms of queries which makes BIA appear more intelligent. For example, all forms of the same query are valid:

- What is the best blender?
- I want the blender that is of the highest quality.
- Show me the blender that is the best.

BIA also supports variations in its answers so they are not always of the same form which also enhances customers' experience and makes BIA appear more intelligent. BIA makes getting information about the products or services quicker and easier comparing to searching through the companies webpages and using various filters. It enables all kinds of profiles of people to search the website for their preferred product or service with ease and in this way their satisfaction with the buying process is increased. Even greater effectiveness of BIA is achieved if BIA is used over a larger number of e-commerce websites. BIA can be instructed with knowledge about some particular area or e-commerce website and it aids its customers in the area of that particular e-commerce website. But BIA can also be instructed with knowledge about multiple e-commerce websites and it can provide a more

broad search for products or services and in this way it can aid customers in a much greater degree, especially with its features of recognizing natural language which makes searching for a product as easy as asking the human shopping assistant but with far greater speed and accuracy.

In order for BIA to be tested it was introduced to several participants that were instructed to use BIA for a period of 20 minutes and to report on their experiences with BIA. In this research a short interview was conducted with each of 11 participants in order to find about their experience with BIA. All participants reported that they find BIA to be helpful and interesting to use. They welcomed the possibility to be able to communicate with BIA in informal way just as they would talk with any real person and they also found BIA to be helpful in searching for some desired product and to be useful in providing a faster way to do it compared to classic website search techniques. The use of natural language was however the most prominent feature of BIA that was reported as interesting and useful. In order to test BIA in more detail a research on a larger scale with more complex metrics is needed and this is one of elements that will be a part of future work.

## CONCLUSION

E-commerce is a constantly growing business that has provided its customers with vast possibilities of choice. A large number of various products and services is emerging on a daily basis. Along with this large number of options a problem of finding the right product or service and navigate through more and more complex e-commerce websites has come into focus. Intelligent agents have been proposed as an adequate aiding technology for customers in using e-commerce services. There are many aspect of e-commerce that intelligent agents can aid in and there are a number of examples of this kind of agents. In this paper BIA (Buyer's Intelligent Agent) is proposed as an intelligent agent that is designed to aid customers in finding the right products/services and information about these products/services in such a way that increases customers' satisfaction. BIA enables its users to communicate with it by using a natural language which is similar to talking with any human shopping assistant. In order to assess what customers think about BIA and whether it increases their satisfaction a short research was conducted in which 11 participants were interviewed after using BIA. The results have shown that customers perceive BIA as an interesting technology that aids customers and makes them more satisfied with overall e-commerce service. Testing more aspects of BIA on a larger sample, including new and improved features in BIA and concluding about its aspects that are most useful to customers will be a part of future research.



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# National Competitiveness and Economic Growth: The Case of Central and Eastern European EU Member States

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## *ABSTRACT*

In this paper we explore the relation between economic growth and national competitiveness on the sample of Central and Eastern European (CEE) EU member states, which had similar political past and herewith a comparable basis of socio-economic development after the political transformation in the beginning of 1990s. In the first part of empirical analysis the high similarity between the trend of GDP per capita growth and the trend of labour productivity, as one of the key driver of economic growth, has been found. The second part of empirical analysis has shown that economic growth, measured by GDP per capita growth, and global competitiveness of an economy, measured by the World Economic Forum's (WEF) Global Competitiveness Index, are related. The comparative analysis has shown that certain transition CEE EU Member States have made the highest progress at various competitiveness pillars, which is reflected in their economic growth. The opposite has been found for two innovation-driven CEE EU Member States. The findings of empirical analysis constitute the rough analytical foundation for necessary changes in the observed countries.

*Key words:* **competitiveness, economic growth, labour productivity, Central and Eastern European Countries, European Union.**

## INTRODUCTION

One of the key factors explaining an economy's growth potential<sup>1</sup>, which determines the pace of economic recovery, is productivity of a country. A country with higher productivity obtains higher rates of returns on investment, which are the fundamental drivers of economy's growth rates. The productivity of a country also determines its ability to sustain a high level of income and herewith the level of a country's prosperity (see Lewis, 2004), which indirectly influences its rates of economic growth. The level of productivity and an economy's growth potential, respectively, can be explained by the concept of competitiveness. There exist a broad debate among politicians and scholars about the meaning and components of this concept. Boltho (1996) explains it as an ability of an economy to secure a higher standard of living than comparable economies, whilst Porter (1998) argues that the only meaningful concept of competitiveness is national productivity. The World Economic Forum's (WEF) Global Competitiveness Index (GCI) (WEF, 2013)), which has been extensively referenced as a credible metric instrument of national competitiveness, is based on the Porter's (1998) definition. According to this definition a country's competitiveness is a set of macroeconomic and microeconomic factors that determine its productivity and economic growth, respectively.

In this paper we explore the relations between national competitiveness, as defined by WEF (2013), and its economic growth, measured by gross domestic product (GDP) per capita growth rates. The existent studies on the relations between competitiveness and economic growth have focused on one dimension of competitiveness (e.g. Harrison, 1996) or on a specific region (e.g. Gardiner *et al.*, 2004). Our empirical analysis is conducted on a sample of Central and Eastern European (CEE) EU member states<sup>2</sup>, that had similar political past and herewith comparable opportunities of socio-economic development. The latter have been increased by the transformation of political systems in the beginning of 1990s and by the accession of these countries to the EU in the last two decades. According to Labaye *et al.* (2013) these economies established a record of growth and economic progress that few regions have matched since from the early 1990s to the onset of the global financial crisis in 2008. These findings indicates some inherent strengths of CEE economies and, thus, potential for their further economic growth. Since the existent analyses of CEE countries' competitiveness focus on one or two competitiveness dimensions (e.g. Wilinski, 2012; Petrariu *et al.*, 2013), discuss competitiveness in one particular year (e.g. European Commission, 2014), or evaluate competitiveness for selected CEE countries (e.g. Niessner, 2013) there is no comprehensive insight into the progress and regression of all competitiveness dimensions in a longer period and their possible impacts on CEE EU member states' economic growth rates. Therefore we estimate the topic of our empirical analysis as highly relevant.

The paper is structured as follows: in the Section 2 we conceptualize national competitiveness and its impacts on economic growth and productivity, respectively, as well as the importance of each competitiveness pillar according to the country's stage of development. The Section 3 comprises the explanation of methodology and data gathering, as well as the formulation of hypotheses. In the Section 4 empirical analysis is conducted and the hypotheses are tested. In the Section 5 we discuss the empirical findings and their applicability in the observed countries .

1 For a review of academic discussion on economic growth see Snowden (2006).

2 Authors variously define Central and Eastern European Region. According to OECD (2014) definition, this region comprises Albania, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovak Republic and Slovenia. The empirical analysis of our paper is conducted on the sample of eleven CEE EU member states.



## COMPETITIVENESS PILLARS AND ECONOMIC GROWTH

According to WEF (2013) national competitiveness is a set of twelve pillars, structured into three groups. The first group is related to the basic requirements – institutions, infrastructure, macroeconomic stability, health and primary education -, the second group represents the sources of efficiency – higher education, goods market efficiency, labor market efficiency, financial market development, technological readiness, market size and business sophistication -, the third group concerns, however, the innovation and business sophistication factors. All twelve pillars tend to reinforce each other, and a weakness in one area often has a negative impact in others. All of the pillars matter to a certain extent for all economies, however, due to different stages of countries' development they affect them in different ways. The basic requirements are critical for countries in the factor-driven stage, the efficiency enhancers are important for countries in the efficiency-driven stage, on the basis of the innovation and sophistication factors, however, compete the countries in the innovation-driven stage. All countries falling in between two of the three stages are considered to be »in transition«. For each of the twelve pillars of a country's competitiveness there are empirical evidences about their impact on economic growth.

The quality of a country's *institutions*, which can be determined by the legal and administrative framework within which individuals, firms, and governments interact to generate wealth, has been proven as a factor of economic growth by several studies (e.g. North 1989; Acemoglu *et al.*, 2002; Rodrik *et al.*, 2002). According to Miller *et al.* (2014) public institutions can impose significant economic costs to businesses and slow the process of economic development (e.g. excessive bureaucracy and red tape, overregulation, corruption, dishonesty in dealing with public contracts, lack of transparency, inability to provide appropriate services for the business sector, improper management of public finances and political dependence of the judicial system). Besides public institutions, good governance of private institutions and maintenance of investor and consumer confidence is also an important element of the process of creating wealth (see Zingales, 1998).

The quality and extensiveness of *infrastructure* networks integrate the national market and connect it at low cost to markets in other countries, enable businesses to get their goods and services to market in a secure and timely manner, allow for a rapid and low cost flow of information, determine the location of economic activities, facilitate the movement of workers, prevent interruptions and shortages of energy supplies etc. Their impact on economic growth has been identified for example by Canning *et al.* (1994) and Calderon and Servén (2004).

Although the literature (e.g. Fischer, 1993) finds only weak effects of *macroeconomic stability* on productivity and growth, there are clear evidences about its impact on short-term economic activity: the impacts of low and moderate levels of inflation are studied for example by Goodfriend (2007) and Temple (2000), the impacts of public debt levels are examined for example by Reinhart and Rogoff (2010) and the impacts of the level of taxes, structure of taxation and the way government spends money are studied for example by Johansson *et al.* (2008).

Healthy workers are vital to a country's productivity, thus, investment in the provision of *health services* is critical factor of economic development and growth, respectively (see Sachs, 2001). The quantity and quality of the *basic education* received by the population increases the workers' efficiency and contributes more to devising or executing innovations, which later on helps businesses to move up the value chain by producing more sophisticated or value-intensive products (see WEF, 2013).

Secondary and tertiary enrollment rates as well as the quality of *higher education* are also key factors for economies that want to move up the value chain (see Krueger and Lindahl, 2001).

*Goods market efficiency* is related to the production of the right mix of products and services, given a country's particular supply-and-demand conditions, as well as to the effectiveness of trading with these goods (WEF, 2013). The best possible environment



for the exchange of goods requires high level of market competition and a minimum of government intervention that impedes business activity (see Branstetter *et al.*, 2010). Openness to international competition, via trade and investment, enables a country to improve productivity, expand the most productive local industries and access more advanced knowledge and technology from abroad (Delgado *et al.*, 2012). A positive relationship between openness and prosperity has been found by several researchers (e.g. Baldwin, 2003; Dollar and Kraay, 2003; Alesina *et al.*, 2005) as well as the positive influence of trade on the transfer of knowledge and firm innovation in a country (e.g. Branstetter, 2006). Market efficiency also depends on demand conditions, such as customer orientation and buyer sophistication (see Porter, 1998). More demanding customers force companies to be more innovative and customer-oriented and thus impose discipline necessary for market efficiency.

To achieve *labour market efficiency* the workers have to be allocated to their most effective use in the economy and provided with incentives to give their best effort in their jobs. Thus, labour market supports economic growth if it is flexible to shift workers from one economic activity to another rapidly and at low cost, and allows for wage fluctuations without much social disruption (see Kaplan, 2009).

Efficient access to capital is important for companies to make the long-term investments needed to raise productivity levels (see Levine, 2005). Thus, *financial market development* is reflected in the allocation of financial resources to those entrepreneurial or investment projects with the highest expected rates of return rather than to the politically connected. Furthermore, it is reflected in its sophistication, which enables the provision of capital from various sources (WEF, 2013). In order to fulfill all those functions, financial markets need appropriate regulation to protect investors and other actors in the economy.

For an economy to prosper it is important to be agile with adopting existing technologies to enhance the productivity of its industries (see Barro and Sala-i-Martin, 2003). Thus, contemporary *technological readiness* is reflected in the information-communication technology (ICT) access and usage.

*Market size*, as one of a country's endowments, affects productivity by the opportunities for achieving economies of scale. In the era of globalization, international markets have become a substitute for domestic markets, especially for small countries. Thus, exports and the membership in the regional integration (which allows cheaper and more simple access to other markets) can be thought of as a substitute for domestic demand in determining the size of the market for the firms of a country. The effects of country's international markets are evidenced for example by study of Parteka and Wolszczak-Derlacz (2013).

*Business sophistication*, which concerns the quantity and the quality of local suppliers, service providers and associated institutions in a particular field and the extent of their interactions, raises productivity due to higher efficiency, creation of greater opportunities for innovation in processes and products and reduction of entry barriers for new firms (see Delgado *et al.*, 2010). Furthermore, firms' advanced operations and strategies (branding, marketing, distribution, advanced production processes, and the production of unique and sophisticated products) spill over into the economy and lead to sophisticated and modern business processes across the country's business sectors, which contributes to higher productivity (see WEF, 2013). Several empirical studies confirm the importance of companies operations and strategies for productivity (e.g. Bloom and Van Reenen, 2007).

The positive impact of *technological innovation* (including institutions and policies supporting innovation) on productivity has been empirically proven for example by Grossman and Helpman (1991) and Furman *et al.* (2002). According to Romer (1990) technological innovation is particularly important for economies, which can not anymore improve their productivity only by integrating and adapting exogenous technologies.



## METHODOLOGY AND DATA

This paper is a macroeconomic dynamic research, based on the secondary data. The calculations of average growth rates of competitiveness indices, labour productivity and GDP per capita for each of the CEE EU member states are followed by comparative analyses of these variables for the discussed countries and by the exploration of relations between variables. Since the last economic and financial crisis differently harmed various economies and co-shaped the economies' growth prospects, we researched the trends of the above mentioned variables in the period from 2008 – 2013. The data were collected from the World Economic Forum's Global Competitiveness Reports and Eurostat Database.

On the basis of the set theoretical background, where we have argumented the concept of a country's competitiveness and its relation with productivity and economic growth, respectively, as well as the importance of various components of competitiveness according to the country's stage of development, we formulate the following hypotheses:

*H1: The growth of national economy's labour productivity, as one of the major driver of economic growth, and the growth of national economy's competitiveness are related.*

*H2: The growth of national economy's GDP per capita and the growth of national economy's competitiveness are related.*

## EMPIRICAL ANALYSIS

In the first part of the empirical analysis we have compared the GDP per capita, the growth of labour productivity and the growth of real GDP per capita in CEE EU member states in the 10 years period.



*Table 1: Deterioration/improvement of GDP per capita 2013/2004 (EU28=100) of CEE EU member states (%)*

Country	Stage of development	GDP per capita 2004 (EU28=100) (%)	GDP per capita 2004 (EU28=100) – average GDP per capita 2004 of 10 CEE EU Member States (EU28=100) (%)	GDP per capita 2013 (EU28=100) (%)	GDP per capita 2013 (EU28=100) – average GDP per capita 2013 of 10 CEE EU Member States (EU28=100) (%)	Deterioration/Improvement of GDP per capita (EU28=100) 2013/2004 according to average GDP per capita 2013 (EU28=100) of 10 CEE EU Member States (%)
<b>Bulgaria</b>	Efficiency-driven	34,0	-23,7	40,0	-28,3	-4,6
<b>Romania</b>		34,0	-23,7	43,0	-25,0	-1,3
<b>Croatia</b>	Transition	57,0	+1,6	60,0	-6,3	-7,9
<b>Hungary</b>		62,0	+7,1	66,0	+0,3	-6,8
<b>Latvia</b>		48,0	-8,3	68,4	+3,0	+11,3
<b>Lithuania</b>		50,0	-6,1	71,2	+6,2	+12,3
<b>Poland</b>		49,0	-7,2	65,3	-0,4	+6,8
<b>Slovak Republic</b>	Innovation-driven	57,0	+1,6	76,0	+11,3	+9,7
<b>Estonia</b>		55,0	-0,6	69,5	+4,8	+5,4
<b>Czech Republic</b>		79,0	+25,8	81,1	+17,1	-8,7
<b>Slovenia</b>		86,0	+33,5	82,0	+17,9	-15,6

Sources: Eurostat, 2014 and own calculations.

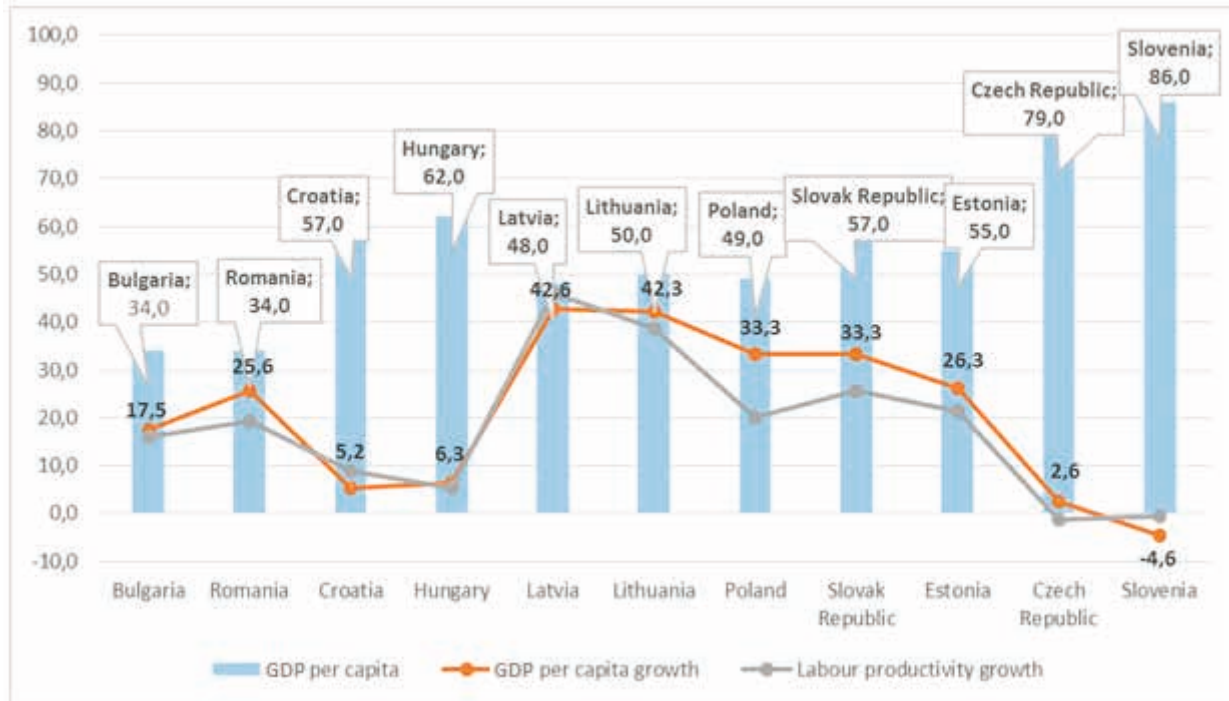
From the Table 1 it is evident that the highest growth of GDP per capita 2004-2013 (EU28=100) in relation to the other 10 CEE EU Member States have recorded four transition CEE EU Member States (Lithuania (12.3%), Latvia (11.3%), Slovak Republic (9.7%), Poland (6.8 %)) and one innovation-driven economy (Estonia (5.4%)). The highest deterioration of this variable, however, have recorded two innovation-driven economies (Slovenia (-15.6%), Czech Republic (-8.7%)) and two transition countries (Croatia (-7.9%), Hungary (-6.8%)).

From the Figure 1 is evident that the trends of the growth of labour productivity and the growth of GDP per capita are very similar. In the countries with small or no differences in the growth rates of these two indicators, labour productivity trend better explains the growth of GDP per capita and vice versa. Due to the time lag in the impacts on economic growth, we suppose that the labour productivity growth, considering also different contributions of the other drivers of economic growth (endogenous and exogenous), is reflected only in the long-term growth of GDP per capita<sup>3</sup>. Herein we can search for the explanation of inconsistencies in average growth rates of the two compared variables in the observed period of time, that are evident from Figure 1.

<sup>3</sup> In our research we were limited with unavailable data on labour productivity and on the other drivers of growth (except labour) for all CEE EU member states and for a longer period of time.



Figure 1: GDP per capita (2004), average growth of GDP per capita and average growth of labour productivity in the period 2004-2013 (%)



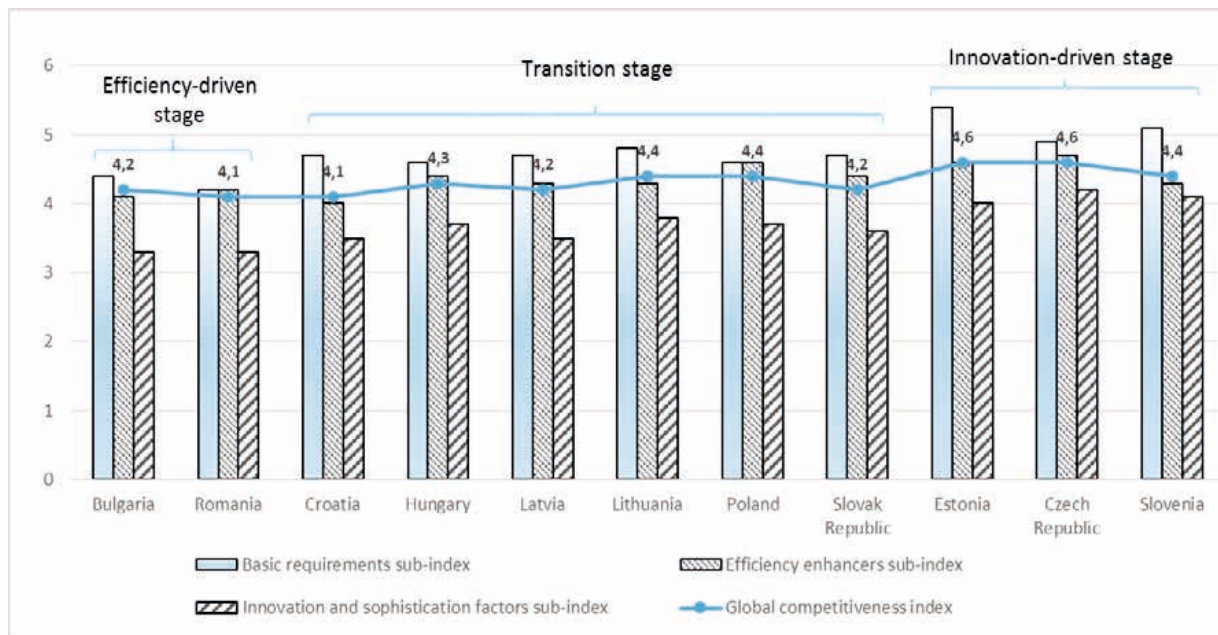
Sources: Eurostat, 2014 and own calculations.

Notes: GDP per capita (EU28=100), labour productivity per person employed (EU27=100).

In the second part of the empirical analysis we have compared the average Global Competitiveness Index (GCI) scores of eleven CEE EU member states and average growth of these scores in the period from 2008 – 2013. The goal of this comparative analysis was to find out the state of competitiveness of these countries after the beginning of financial and economic crisis and the pillars of competitiveness, on which each country has recorded improvement or deterioration in the observed period of time. To get a detailed insight into the country's competitiveness we have analysed each group of pillars – basic requirements, efficiency enhancers and innovation and sophistication factors.

Figure 2 shows that the highest average levels of competitiveness in the period from 2008-2013 achieved Czech Republic and Estonia. It is also evident that Lithuania and Poland, classified as transition countries, achieved the same average level of competitiveness as Slovenia, which is classified among the countries at the innovation-driven stage of development. The latter indicates higher progress of Poland and Lithuania. The same observation is valid for Bulgaria that achieved the same average level of competitiveness as Latvia and Slovak Republic, although its level of development is lower. Similarly, Romania, which is classified among countries at the efficiency-driven stage of development, recorded the same average level of competitiveness as Croatia, which is ranked among transition countries.

Figure 2: Average global competitiveness of CEE EU member states (scores, 2008-2013)

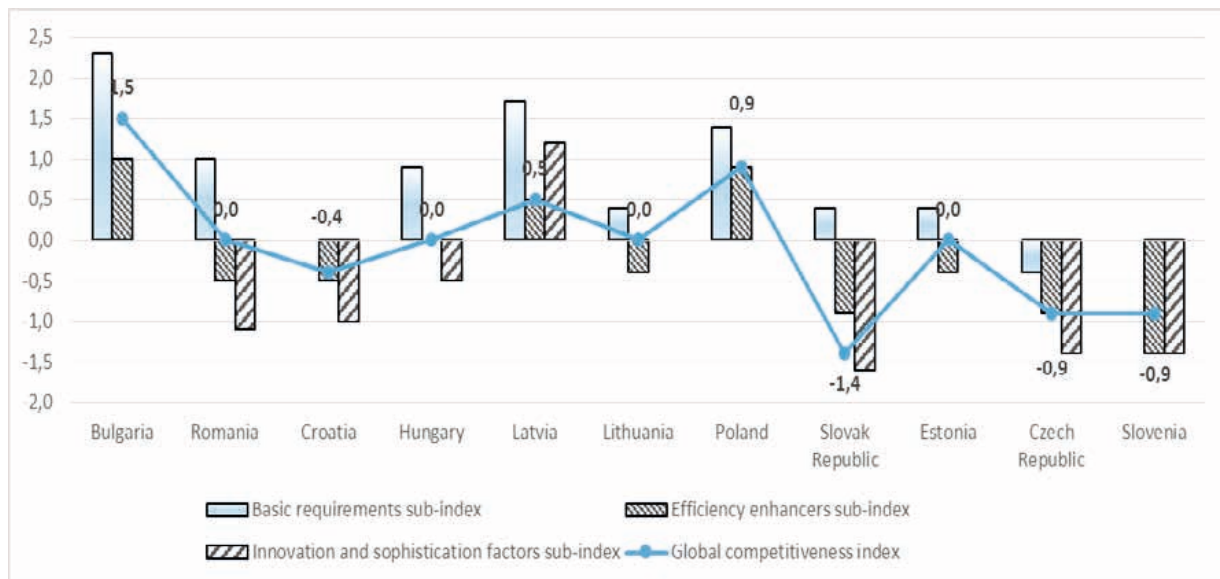


Sources: WEF, 2008, 2009, 2010, 2011, 2012, 2013 and own calculations.

Notes: see WEF (2013, p. 10) for the classification of countries according to their level of development and for the sub-indices weights in the GCI according to the stage of development.

The Figure 3 reveals the average growth levels of total competitiveness and the average growth levels of three groups of competitiveness pillars for CEE EU member states. Herewith we gain an insight into the main fields of progress and regression in competitiveness of CEE EU member countries in the observed period of time. Czech Republic worsen its position in all three groups of competitiveness factors; the highest decrease evidenced the group of innovation and sophistication factors, which endangers the Czech Republic's further growth prospects with regard to its achieved stage of development. Very similar observation is valid for Slovenia, that recorded deterioration not only in the most important group of competitiveness pillars according to its level of development – innovation and sophistication factors -, but also in the field of efficiency factors, which represent the foundations for the conclusion of a country's transition period.

Figure 3: Average growth of global competitiveness of CEE EU member states (% , 2008-2013)



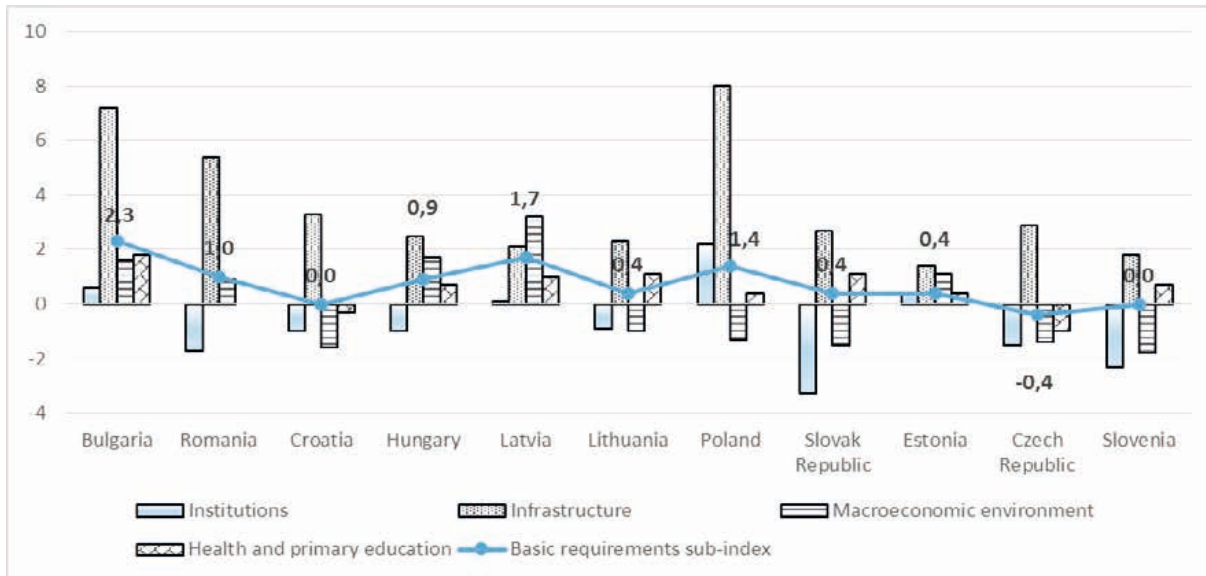
Sources: WEF, 2008, 2009, 2010, 2011, 2012, 2013 and own calculations.

Among the transition countries, the data show that the worst position has achieved Slovak Republic. The other transition countries (with the exception of Croatia) either maintained their prior level of competitiveness (Hungary and Lithuania) or improved it (Poland and Latvia). According to data, one of the two CEE EU member countries at the efficiency-driven stage of development - Bulgaria – outperformed all other countries in the field of average competitiveness growth in the observed period of time.

A more detailed picture of a country's position as regards basic factors of competitiveness is shown by Figure 4. All CEE EU member states managed to improve their total competitiveness in this field, with the exception of Czech Republic, Slovenia and Croatia. These three countries and Slovak Republic recorded the highest rates of regression in the field of institutions and macroeconomic environment. The deterioration of institutional environment has been evidenced also for Romania, Hungary and Lithuania. The highest competitiveness in the field of basic requirements recorded Bulgaria, Latvia and Poland, followed by Romania and Hungary. Poland, Bulgaria, Romania and Croatia made the highest progress in the field of infrastructure. Poland is also a leading country as regards progress in the field of institutional environment.



Figure 4: Average growth of global competitiveness of CEE EU member states in the field of basic requirements (% , 2008-2013)

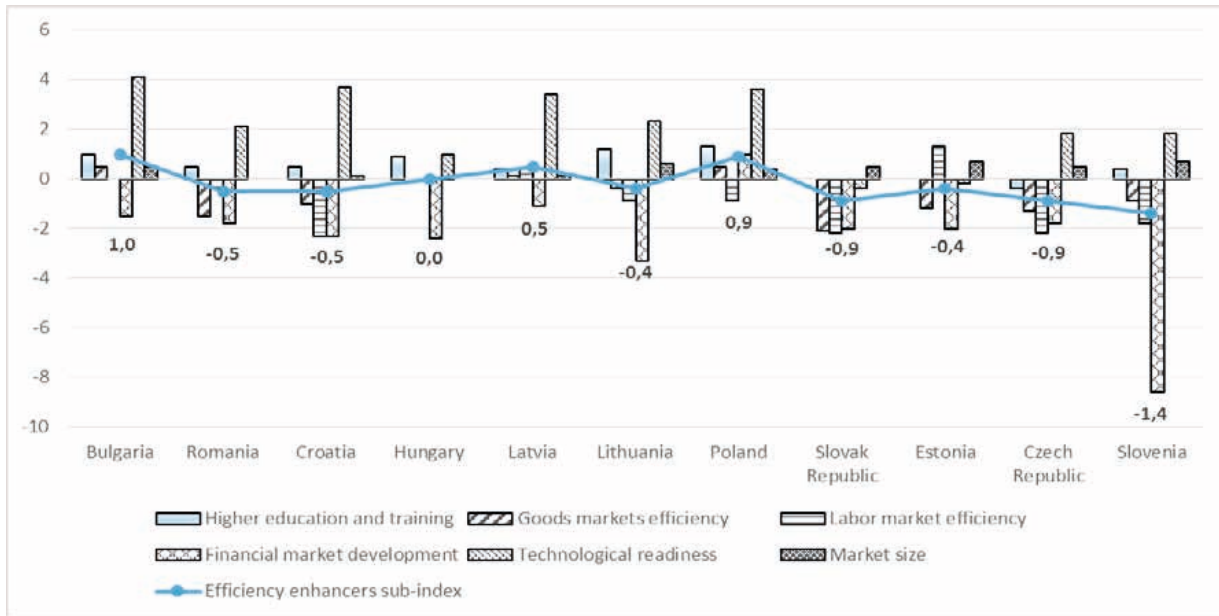


Sources: WEF, 2008, 2009, 2010, 2011, 2012, 2013 and own calculations.

Figure 5 shows that the deterioration of efficiency enhancers was on average larger in countries at the innovation-driven stage of development. Only three countries – Bulgaria, Poland and Latvia – managed to improve the competitiveness in this group of factors. Most of the countries had deteriorated their competitiveness in the field of financial development, with far the worst position of Slovenia in this pillar. The deteriorations of labour market efficiency and goods market efficiency were the second and third most important reasons for the decline of overall competitiveness in this group of pillars. However, most of the CEE EU member states recorded progress in the field of technological readiness development; the best results in this field achieved both countries at the efficiency-stage of development (Bulgaria, Romania), and all transition countries with the exception of Slovak Republic.

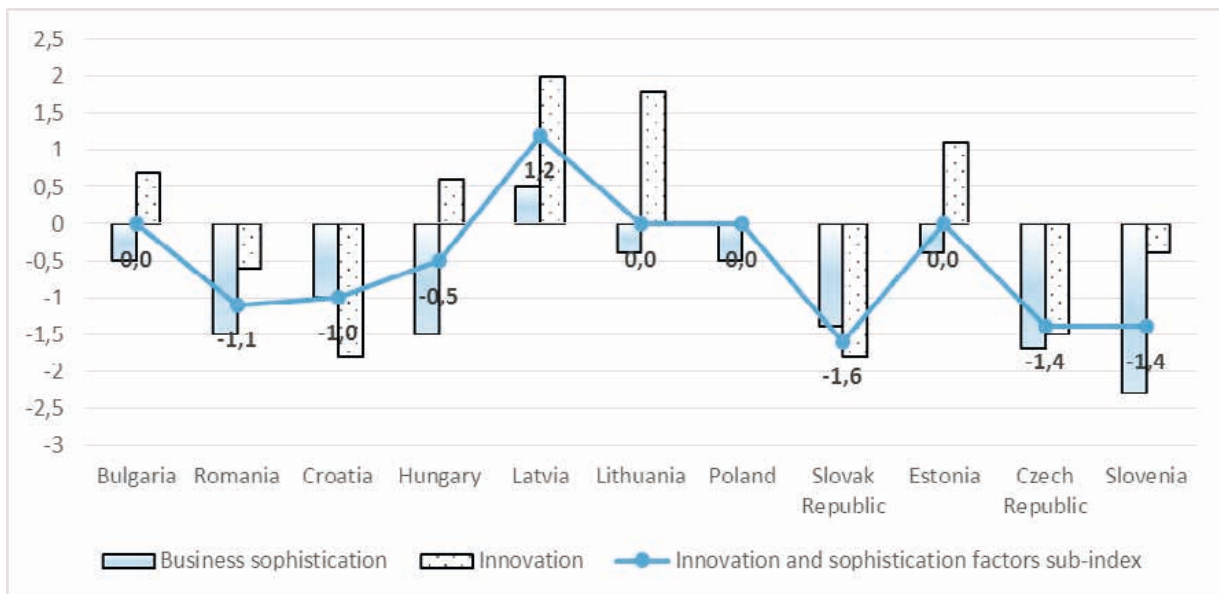


Figure 5: Average growth of global competitiveness of CEE EU member states in the field of efficiency enhancers (% , 2008-2013)



Sources: WEF, 2008, 2009, 2010, 2011, 2012, 2013 and own calculations.

Figure 6: Average growth of global competitiveness of CEE EU member states in the field of innovation and sophistication factors (% , 2008-2013)



Sources: WEF, 2008, 2009, 2010, 2011, 2012, 2013 and own calculations.

The group of business sophistication and technological innovation factors (including institutions and policies supporting innovation) substantially worsen in two countries that compete on this basis – Slovenia and Czech Republic - , as well as in Croatia, Slovak Republic and Hungary, where this factor could contribute to the faster progress of the innovation-driven stage of development

(see Figure 6). In the other transition countries (Latvia, Lithuania and Poland) and in Estonia the average competitiveness of this group of pillars either remained unchanged or increased. Bulgaria, as an efficiency-driven country, recorded even slight increase in the field of technological innovation, whilst Romania slightly regressed, although not so much as several other more developed CEE EU member states.

Table 2 is the synthesis of the state of competitiveness of CEE EU member states in the period from 2008 to 2013. The findings are the following: Latvia and Bulgaria have recorded improvement at the highest number of competitiveness pillars - 11 (Latvia) and 9 (Bulgaria) -, Poland and Estonia have each improved 7 pillars, Hungary and Lithuania have each improved 6 pillars, Romania, Croatia and Slovenia have recorded improvement each at 4 pillars, and Slovak and Czech Republic have each improved 3 pillars.

*Table 2: The synthesis of the state of competitiveness of CEE EU member states (2008 – 2013)*

Economy	Basic requirements					Efficiency enhancers							Innovation and sophistication factors			Rank
	Tc	Ins	Inf	Me	Hpe	Tc	Het	Gme	Lme	Fmd	Tr	Ms	Tc	Bs	In	
<b>Bulgaria</b>	Im	+	+	+	+	Im	+	+	Un	-	+	+	Un	-	+	<b>1</b>
<b>Romania</b>	Im	-	+	+	Un	De	+	-	Un	-	-	+	De	-	-	<b>7</b>
<b>Croatia</b>	Un	-	+	-	-	De	+	-	-	-	+	+	De	-	-	<b>8</b>
<b>Hungary</b>	Im	-	+	+	+	Un	+	Un	Un	-	+	Un	De	-	+	<b>4</b>
<b>Latvia</b>	Im	+	+	+	+	Im	+	+	+	-	+	+	Im	+	+	<b>2</b>
<b>Lithuania</b>	Im	-	+	-	+	De	+	-	-	-	+	+	Un	-	+	<b>6</b>
<b>Poland</b>	Im	+	+	-	+	Im	+	+	-	-	+	+	Un	-	Un	<b>3</b>
<b>Slovak Republic</b>	Im	-	+	-	+	De	Un	-	-	-	-	+	De	-	-	<b>11</b>
<b>Estonia</b>	Im	+	+	+	+	De	Un	-	+	-	-	+	Un	-	+	<b>5</b>
<b>Czech Republic</b>	De	-	+	-	-	De	-	-	-	-	+	+	De	-	-	<b>10</b>
<b>Slovenia</b>	Un	-	+	-	-	De	+	-	-	-	+	+	De	-	-	<b>9</b>

Sources: WEF, 2008, 2009, 2010, 2011, 2012, 2013 and own calculations.

Notes: Tc – total competitiveness, Ins – institutions, Inf – infrastructure, Me – macroeconomic environment, Hpe – Health and primary education, Het – higher education and training, Gme – goods market efficiency, Lme – labour market efficiency, Fmd – financial market development, Tr – technology readiness, Ms – market size, Bs – business sophistication, In – innovation, Im – improvement, Un – unchanged, De - deterioration

The best position has achieved Latvia, which has improved all three competitiveness components – basic requirements, efficiency enhancers and innovation and sophistication factors -, the worst position has, however, achieved Czech Republic, which has deteriorated all three competitiveness components. If we take a look to the whole picture of competitiveness of CEE EU member states in the observed period of time we – take into consideration also the intensities of changes (see Figure 3) and the total competitiveness of each of the three competitiveness components – we can rank these countries according to their average competitiveness in the observed period of time (see last column in the Table 2).

If we compare the competitiveness rankings of these countries with their labour productivity growth rankings and GDP per capita growth rankings (Figure 1 and Table 3) we can see that seven out of the eleven countries recorded low differences in these



rankings (0 to 2 places) and that the lower average differences are recorded between the GDP per capita growth rankings and competitiveness growth rankings (2.4). We estimate the 24% and 27% of differences between the rankings as the low levels and herewith we confirm our two hypotheses:

*H1: The growth of national economy's labour productivity, as one of the major driver of economic growth, and the growth of national economy's competitiveness are related.*

*H2: The growth of national economy's GDP per capita and the growth of national economy's competitiveness are related.*

**Table 3: Rankings of CEE EU Member Countries according to labour productivity, GDP per capita and global competitiveness**

	LP rank	C rank	LP rank – C rank	GDP p.c. rank	GDP p.c. rank – C rank
<b>Bulgaria</b>	7	1	6	7	6
<b>Romania</b>	6	7	(-)1	6	(-)1
<b>Croatia</b>	8	8	0	9	1
<b>Hungary</b>	9	4	5	8	4
<b>Latvia</b>	1	2	(-)1	1	(-)1
<b>Lithuania</b>	2	6	(-)4	2	(-)4
<b>Poland</b>	5	3	2	3	0
<b>Slovak Republic</b>	3	11	(-)8	4	(-)7
<b>Estonia</b>	4	5	(-)1	5	0
<b>Czech Republic</b>	11	10	1	10	0
<b>Slovenia</b>	10	9	1	11	2
			AVDR: 2.7		AVDR: 2.4

Sources: Sources: WEF, 2008, 2009, 2010, 2011, 2012, 2013, Eurostat, 2014 and own calculations.

Notes: LP – labour productivity, C – competitiveness, AVDR – average differences in ranks.

## DISCUSSION AND CONCLUSION

A country's economic growth and herewith the standard of living of its population are related to many factors, that are inside or outside control of policymakers, institutions, companies and individuals. The intensities and the directions of impacts of one and the other group of factors are conditional on several unconsidered factors, however, we can presume the existence of the relations between one and the other group of factors and economic growth. Although variously conceptualised and measured, a country's competitiveness comprises endogenous and exogenous variables of economic prosperity. The key goal of this paper was to find out if a country's competitiveness and its economic growth are related. As a measure of competitiveness we have used World Economic Forum's Global Competitiveness Index, as a measure of economic growth, however, GDP per capita. The research was made on the sample of Central and Eastern European EU Member States, due to their similar political past and similar opportunities after

their political transformation in the beginning of 1990s. The observed period was partly the period from 2004 to 2013, when all of these countries have become members of the EU, and partly the period from 2008, when the financial and economic crisis has begun. On the basis of a simple methodology – calculations of average growth rates, determination of ranks and their congruity – we have confirmed the relation between a country's competitiveness and its economic growth. Similar observation was found for example by Dobrinsky and Havlik (2014). The findings show that especially some transition CEE EU Member States have recorded high growth of GDP per capita in the observed periods, which is accompanied by their higher competitiveness, and that some innovation-driven CEE EU Member States have deteriorated their positions in this regard. In general, each country has to put the emphasis on the development of those competitiveness pillars, that are the most important for the country's level of development. However, as all competitiveness pillars are mutually dependent, a country should not neglect the development of the others. Our research has shown main gaps in the competitiveness of each observed country and thus, it can be used as a rough analytical foundation for deliberation of measures in the areas, where severe changes are necessary. The least promising findings for Slovenia demand fast responses. If it won't search the leverages for their economic impetus in the reforms of its political and economic structures, which hampers its competitiveness and development, Slovenia's outlook for economic recovery in the turbulent regional and international political and economic environment is bad.

As the key limitation of our research we see the fact, that the Global Competitiveness Index is a composite indicator, composed also from proxy indicators, and according to the set methodology. Possible limitations can be also the simple research methodology and the small sample of observed countries.



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# The Importance of Monitoring Employees' Job Satisfaction

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## *ABSTRACT*

**Introduction:** Job satisfaction is determined by a comparison of one's prior expectations about the job and the actual experience of their job. Job satisfaction relates to beliefs and emotions that individuals have about their work and their job. The aim of the study was to find out if there are any differences according to the demographic data in job satisfaction of employees in nursing.

**Methods:** Employees in nursing of eight Slovenian hospitals participated in the study. The questionnaire that was used included statements regarding the demographic data and employees' job satisfaction. The statistical analysis included Mann-Whitney test and ANOVA analysis.

**Results:** There is statistically significant difference ( $Z=-6.460$ ;  $p=0.001$ ) in the level of job satisfaction between leaders and other employees in nursing. There are also statistically significant differences in the level of employees' job satisfaction in nursing according to age ( $F=4.549$ ;  $p=0.033$ ) and level of education ( $F=6.966$ ;  $p=0.009$ ).

**Discussion and conclusion:** The working environment affects the employee, at his level of performance and well-being. Creating a positive work environment has a positive impact on work performance and employees' satisfaction. Only satisfied leaders can care for satisfaction of other employees. According to the constantly changing health system, hospitals will have to recognize the importance of employees' job satisfaction. The management has to monitor the job satisfaction of all employees once a year.

*Key words:* hospital, employees, job satisfaction



## INTRODUCTION

Job satisfaction is determined by a comparison of one's prior expectations about the job and the actual experience of the job (Mihalič, 2008). It has been found that job satisfaction relates to beliefs and emotions that individuals have about their work and their job (Lu et al., 2005). It has been described as an attitude with an affective and cognitive component (Judge et al., 2001). When establishing the level of job satisfaction, we should focus on how employees feel about their work and personal relationships in the workplace, and on how leaders influence employees' satisfaction. Without a doubt, satisfied employees are the ultimate goal of every leader. On the other hand, the goal of every employee is to find the kind of work that matches their abilities and interests as closely as possible, enables them success, and provides them with opportunities for promotion. Satisfied employees tend to be more productive and committed to their employers, and a direct correlation has been shown between staff satisfaction and patient satisfaction in health care organizations (Al-Almeri, 2002; Tzeng, 2002).

Job satisfaction refers to the employees' emotional state and has some points in common with the psychological well-being. Wright and Bonett (2007) have found a relatively strong link between psychological well-being and satisfaction in the workplace. Each person has their own views on the work according to the spirit and personal development. The work offers many advantages for satisfaction and well-being, such as possibility for the social interaction, provides support and allows income (Henry, 2004). Job satisfaction is a key construct of organizational behavior and is related to work performance (Judge & Larsen, 2001), organizational behavior (Le Pine et al., 2002), absenteeism (Thorenou, 1993) and life satisfaction (Tait et al., 1989). Although studies have shown varying degrees of job satisfaction of nurses, the factors of satisfaction usually quite similar and include working conditions, interpersonal relationships, salary, job security, responsibility and working hours (Daehlen, 2008; Ellenbecker et al., 2008; Larrabee et al., 2003; Lu et al., 2005; Price, 2002; Sourdif, 2004; Zangaro & Soeken, 2007). Research in the field of nursing job satisfaction is mainly focused on the relationship between job satisfaction and organizational outcomes (Ingersoll et al., 2002; Lynn & Redman, 2005; Lu et al., 2002) or the working environment (Blegen, 1993; Leung et al., 2007; Li & Lambert, 2008). In health care organizations are therefore, showed a link between employee satisfaction and patient satisfaction (Al-Almere, 2000; Tzeng, 2002). Job satisfaction therefore, tells us how people feel in their workplace, and is a part of the general level of satisfaction in the workplace and in life. For most people the emotional experience of work, affecting the work they do, but we should also take into account other relevant factors, such as relations with superiors and colleagues as well as opportunities for growth and development of the individual. Job satisfaction is therefore the emotional response of people to their work, and also has a significant impact on the overall on their well-being.

Because it affects not only on quality of nursing, but also on patients' satisfaction, the level of employees' job satisfaction is very important for health care institutions. The aim of the study was to found out if there are any differences according to the demographic data in job satisfaction of employees in nursing. The following hypotheses are:

H1: According to the leading positions there are statistically significant differences in the level of job satisfaction.

H2: According to age and level of education there are statistically significant differences in the level of job satisfaction.



## METHODS

Study took place in 2014 in 8 Slovenian hospitals with internal medicine and surgery departments. The questionnaires were distributed in the morning shift. There were 1100 questionnaires distributed, 85 questionnaires were sent to middle- and unit-level nurse leaders and 1015 to other nursing employees. Nurse leaders were not selected randomly; the questionnaires were sent only to those who occupied the position of head of department, unit, or clinic, which means that purposive sampling was used. 640 questionnaires were correctly and completely filled out and the response rate was 58%. We received a written permission for the study from all the participating hospitals and the National Medical Ethics Committee of the Republic of Slovenia (No.157/09/13).

We used the questionnaire with 15 items of job satisfaction prepared in cooperation with O.K Consulting (Company for education and transformational management) and based on the theoretical background (Mihalič, 2008) and demographic data (gender, age, years of employment, years of employment in leading position and level of education). Leaders and employees self-assessed their job satisfaction on a 6-point Likert-type scale ranging from 1 (strongly disagree) to 6 (strongly agree). Cronbach alpha was 0.943.

For the statistical analysis, the Statistical Package for the Social Sciences version 20.0 (IBM; SPSS Inc., Chicago, IL, USA) was used. The differences among individual variables were analysed with the Mann-Whitney test and one way ANOVA. A  $p$ -value of  $<0.05$  was considered to be statistically significant.

## RESULTS

The study included 75 nurse leaders and 565 other employees in nursing. There were 87 (13.7%) men and 553 (86.3%) women. The average age of leaders was 42.5 years and of other employees 40.4 years. On average, leaders spent 8.6 years in the leading position (from 0.5 to 32 years).

The level of job satisfaction for leaders ( $=4.26$ ,  $s=0.816$ ) and other employees ( $=3.12$ ,  $s=1.441$ ) in nursing is at the medium level. There were statistically significant differences ( $Z=-6.460$ ;  $p=0<0.001$ ) between the perception of job satisfaction by leaders and other employees in nursing. For better understanding of the average value of the level of job satisfaction, we transformed the variables into the categorical ones. We used six possible estimates divided into two categories. In the first category, we combined the estimates 1, 2, and 3 which are related to the following assessment: with it we found out that the respondents are not satisfy with their job. In the second category, we combined the estimates 4, 5, and 6 which are related to the following assessment: with it we determined that the respondents are satisfied with their job. Thus, we obtain the number and percentage of employees and leaders who are not satisfied with their job and those who are satisfied with their job. Accordingly, we found that 53% of the respondents in nursing did not satisfy with their job while only 47% of the respondents in nursing are satisfied with their job. When we distributed the results between the job positions (leaders/other employees), we found that 57% of employees is not satisfy with job, while 43% of employees are satisfied with job. Among leaders we found that 23% of them are not satisfied with job and 77% of leaders are satisfied with their job.



*Table 1: Results of One way ANOVA test for employees' job satisfaction*

		Sum of squares	df	Mean square	F	p
Age	Between Groups	398.151	1	398.151	4.549	0.033
	Within Groups	55838.410	638	87.521		
	Total	56236.561	639			
Level of education	Between Groups	8.708	1	8.708	6.966	0.009
	Within Groups	796.250	637	1.120		
	Total	806.958	638			

*Legend: df=degree of freedom; F=value of one way ANOVA, p=statistically significant level*

In Table 1, we presented the results of the One way ANOVA test for job satisfaction of employees in nursing. We found statistically significant differences in the level of employees' job satisfaction in nursing according to age ( $F=4.549$ ;  $p=0.033$ ) and level of education ( $F=6.966$ ;  $p=0.009$ ).

## DISCUSSION

We found out that the level of job satisfaction in nursing is at the median level for leaders and other employees, like also some other researchers (Burje et al., 2010; Golbasi et al., 2008; Gurkova et al., 2011; Gurkova et al., 2014; Jaafarpan & Khani, 2012). A higher percentage of leaders than other employees in nursing are satisfied with their job. We found statistically significant differences in job satisfaction between leaders and other employees in nursing. Some researchers (Ingersoll et al., 2002; Kovner et al., 2006; Lorber & Skela Savič, 2012) found that the job position is associated with employees' job satisfaction. Nowadays, leaders consider employees' job satisfaction more than ever before, for one reason, that more satisfied employees are more committed to the organization. Similar results were obtained by Sveinsdottir and co-authors (2006), which showed that nurses were most satisfied with their co-workers and nurse leader, and least satisfied with their opportunities for promotion and pay level.

The results of this study indicate that the studied demographic factors such as age and level of education are significantly associated with the job satisfaction of employees in nursing in Slovenian hospitals. The results confirm some previous studies (Al-Husami, 2008; Chiok Foong Loke, 2001; Coomber & Bariball, 2006; Gurkova et al., 2011; Gurkova et al., 2014; Ma et al., 2003) where it was found that one or both of the studied demographic variables are significantly associated with employees' job satisfaction. We agree with Karsh and co-authors (2005) that the job and organizational factor predicted employees' job satisfaction in addition to the demographic data.



## CONCLUSION

In the constantly changing health system, hospitals will have to recognize the importance of satisfied employees, because employees' job satisfaction is important for every organization. It is necessary to monitor employees' job satisfaction, and at the same time, it would be good to know which part of the job satisfaction is lower for employees in nursing. That is the only way to adapt to an individual and achieve greater efficiency. Employees in nursing are more likely to be more satisfied when they have an appropriate support.

The implications of these findings suggest that leaders in nursing have an important role in the promotion of job satisfaction among nurses since nurses play an important role for the satisfaction and safety of patients. Leader can improve employees' satisfaction, when he/she determine the factors of job satisfaction for each individual employee, involve all employees in the decision making process, introduction of changes, regard all employees as equal coworkers, and promote a positive work climate.



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# Measuring Regional Economic Safety Through Specialization and Economic Performance Indicators

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## *ABSTRACT*

The article explores the issue of economic safety and the method of measuring it through gross regional product structure, GRP being the main indicator of economic performance of a region. GRP structure is being analyzed through rates of return in regional specialization industry. Regional specialization is assessed through location quotients. Main theoretic concepts are argued and illustrated on the example of Transbaikal region of Russia, a region in extremely unsafe economic conditions. The hypothesis of energy costs influence on regional economic safety is explored. Regions with high energy costs in the structure of total production costs are backward in economic performance, which is influenced by energy-output ratio and access to cheap energy sources.

*Key words: economic safety, regional economic safety, regional economic performance, energy safety*

## INTRODUCTION

The notion of economic safety has been viewed mostly from the point of microeconomics and bankruptcy risks, employment and living standard or even protection from criminal issues. At the regional level economic safety has been either associated with competitiveness or hasn't been explored at all. This paper attempts to explore the notion of regional economic safety and its measurement resulting in a definition of regional economic safety and factors influencing it. Economic performance of a region is viewed as the main indicator of economic safety. The need for such definition and measurement is urgent due to the fact that regional authorities seeking a course of economic policy often highlight the goal of ensuring economic safety though there's lack of conformity what indicators to chose or what measures to attain. Thus there has to be a common understanding of the term 'regional economic safety' and, more importantly, there has to be a method of defining main threats to it.

## REVIEW OF LITERATURE AND THE CHOICE OF TERMINOLOGY

This paper specifically uses the term 'economic safety' towards a regional economy, avoiding the term economic security. Though apart from economics the two terms 'safety' and 'security' could be used interchangeably, but the issue of correctness of their usage has been urgent in some other areas for decades.

Individually the two words 'safety' and 'security' have the following definitions in the dictionaries:

*Table 1: Different interpretations of 'security' and 'safety'*

Source	Safety	Security	Similarity	Difference
<b>Merriam-Webster</b>	freedom from harm or danger : the state of being safe	the state of being protected or safe from harm	Defined as 'state'	Security implies protection, safety implies freedom
<b>Oxford</b>	the state of being safe and protected from danger or harm	the activities involved in protecting a country, building or person against attack, danger, etc.	Both imply 'protection'	Security is defined as 'activities'; Safety is defined as 'state'
<b>Longman</b>	when someone or something is safe from danger or harm	things that are done to keep a person, building, or country safe from danger or crime	None	'safety' is defined as state, 'security' is defined as 'protective measures'

Three dictionaries out of three define safety as a state and two of them define security as protection or protective measures (or activities), two dictionaries specify the relationship between the two terms which we can explain as follows: security implies the measures taken to ensure safety, safety defined as a state of being free from danger of any kind.

This idea was proved by analyses conducted in specific fields of study, apart from economics, i.e. A. Burns, J. McDermid and J. Dobson (1991) consider the distinction between the terms 'safety' and 'security' in computer technology. In terms of differences



in causal structure and in terms of differences in the degree of harm caused they found that the difference between security and safety lies within the fact that 'security' implies protection or defense.

It should be noted that in economics the term 'safety' is underused, and most of the research papers and other types of publications explore 'economic security' on three basic levels - an individual, an enterprise, and a territory (mainly a nation).

Hirschman (1980) and Baldwin (1985) viewed a nation's economic security as security from manipulation by other governments and economic insecurity as vulnerability to other states. M. Kahler (2003) argues that security is a state of being free from harmful effects of globalization.

Hacker, Huber etc (2012) claim that economic security is the degree to which individuals are protected against hardship causing economic losses. Liutak and Kravchuk (2013) use the terms interchangeably on the corporate level, implying the state of being protected from external risks.

Thus we can conclude that, regardless of field and level, the term 'security' has the connotation of 'protection' from harm, danger or risk, namely the state of being protected or the measures to ensure that protection, and safety is the overall state of being free (not necessarily but most possibly 'protected') from harm, danger or risk. We will employ these differences and use the terms 'economic safety' and 'economic security' separately but in the same equation:

Economic safety is the state of an economic system of being free (or protected) from threats.

Economic security is the way to ensure the economic safety.

In Russian economic and political science there is only one term to mean 'safety' and 'security' in English – "безопасность". Thus in multiple definitions of economic security (or safety) we can see inclinations to both English terms individually, but all in all 'economic security (or safety)' in Russian terminology also incorporates the notions of 'stability' and 'protection' (Maga, 2014).

The similarity between Russian and English terminology lies within the very notion of safety which is defined as a 'state', namely a state of an economic system. But we can assert that in Russian terminology the connotation of 'security' is prevalent due to the initial definition of the term 'безопасность' as a state of being protected, but there the objects of protection are not economic or social agents but the interests of those agents. So we can conclude that if protection is a barrier between interests and threats coming from all possible directions. Here we will mean purely economic interests (if they can be purely economic). Incorporating the notion of 'threat' into the analysis:

Economic safety is the state of an economic system of being free from threats.

Economic security is the way to ensure the economic safety.

Threat is an aggregate of conditions and factors preventing the realization of economic interests.

Thus economic safety is the state of an economic system characterized by an aggregate of conditions and factors favorable for realization of economic interests.

And if economic interests range from economic survival, to economic stability and economic prosperity, so the threats can vary depending on realization of which kind of interest they can be an obstacle to. So we can classify the threats into three levels, also depending on the extent of their influence. A phenomenon resulting in drastic drop of basic economic indicators is a serious threat, if the indicators change negatively but not sharply it's a threat to stability and if a threat hinders the growth it's a threat to development (or growth).



We assume this terminology applicable for every level of economic activity: individual, corporate, and national. But we also assert that there should be other levels – regional or global, depending on the territory over which the economic system extends. So we are going to use this terminology on the regional level, regional economy being a part of national economy.

## METHODOLOGY

Currently there are two main approaches to measure regional economic safety: criterial assessment (Abalkin, 1994) and assessment of main economic indicators (Orlov, 1995). Both methods use an integrated index of multiple factors including economic, social, and demographic indicators.

Orlov (1995) defines them as following:

- economic indicators: GRP per capita, investment activity, R&D activity, budget balance, and trade balance.
- social indicators: poverty rate, social gap, unemployment rate.
- demographic indicators: life expectancy, migration balance.

On the one hand this kind of assessment seems to be too complicated and on the other hand the point in time for different indicators may be different. Here to measure economic safety we will have to refer to two time periods: short-term economic safety, defined by immediate yearly measurements (GRP and investment), and long-term economic safety, defined by long-standing indicators (social and demographic).

For a short-term analysis it is necessary to use a yearly indicator of economic performance of a region. In this paper we claim that the economic performance of a region over time is the main indicator of economic safety. Threats tend to disrupt the economic performance thus lower economic safety is indicated by low measures of economic performance indicators. Identifying the threats and their level of influence is a key step in stabilizing regional economies. The basic indicator of regional performance is agreed to be gross regional product, GRP and GRP per capita altogether with growth patterns over a period of time. Overall economic activity, number of enterprises, employment, average salary, and investments also have been viewed as indicators of economic performance.

We consider Gross Regional Product (GRP in Russian economic science terminology) or Nominal gross value added (GVA in European terminology) a viable indicator of regional economic performance, for it demonstrates total economic efficiency of regional economy over time. It provides a value for the amount of goods and services that have been produced in the economy, less the cost of all inputs and raw materials that are directly attributable to that production. Threats to economic performance thus are the factors that make GRP rise or fall and these factors can be identified through factor analysis.

As GRP is the value of all final goods and services produced within a region in a given year, so we should investigate why this value may decrease or why its growth hasn't been sufficient. Thus we are coming to a conclusion about the following aspects or sources of threat. As viewed from the structure of the GRP, it is logical to assume that any decrease in an industry's output will also be a threat to economic safety. But not any industry's performance causes drastic changes in GRP. It should be viewed in connection with the industry's share in overall economic performance. An industry which takes a substantial share of GRP can be solely responsible for a GRP change.



So decline in some industries' performance can have much higher effect on overall economic performance of a region. Some industries can be extremely successful and still will have no effect on economic safety. Value created within some industries can be increased greatly when products are sold not on local markets but are exported. Such industries are the areas of regional economy specialization. Exporting industries are specialization industries and the ones with product used only locally are local supporting industries, or infrastructural industries. One classification (Yusupov, 2007) divides industries into local infrastructural and specialization industries, the ones that have export potential; it's the latter ones that have most competitive advantage in the economy. So a decrease in a specialization industry can be a more serious threat to economic safety than decline in local and supporting industries' performance.

Drastic changes in GRP may be also caused by insufficient value added measures in the above-mentioned industries. Added value is directly connected to profitability. If specialization industries do not create enough added value it will also be a threat of economic safety of a region.

## MEASURING ECONOMIC SAFETY

If Gross regional product is a combination of added value created in different industries then economic safety depends on the structure of GRP. Russian statistics defines sixteen industries within an economy: agriculture, forestry and hunting, fishery, mining, manufacturing, utility, construction, retail and wholesale, hotels and restaurants, transportation and communication, financial activities, real estate, public administration and military office, education, healthcare and social care, other services, and households. These industries have different contribution to GRP. And these industries need to be grouped into specialization and local industries. Logically GRP of a time period should be higher than GRP of the previous period (discounted).

If gross regional product is a sum added values (*ADV*) from all industries (*i* to *n*), then we will accept the following representation of it:

$$GRP_t = \sum_{i=1}^n ADV_{ti} \quad (1)$$

But it's the structure of the GRP which is of importance in measuring economic safety (*ES*). Thus we may come to a conclusion of the following way to describe economic safety (paralleled to GRP):

$$ES_t = z_1 ADV_{t1} + z_2 ADV_{t2} + z_3 ADV_{t3} + \dots + z_n ADV_{tn}, \quad (2)$$

where  $z_i, i=1,2,\dots,n$ , are shares that a certain industry has in GRP,

ADVs are added value measures in certain industries, or as ADV depends on profitability these will be **the rates of return** (*RR*) of those industries.

Introducing areas of specialization into the formula we get the logic of measuring economic safety:

$$ES_t = RR_{tlocal} + xRR_{tspecialization} \quad (3)$$

$$ES_t > ES_{t-1}$$

where *x* is the location quotient for a specialization industry.

## TRANSBAIKAL REGION

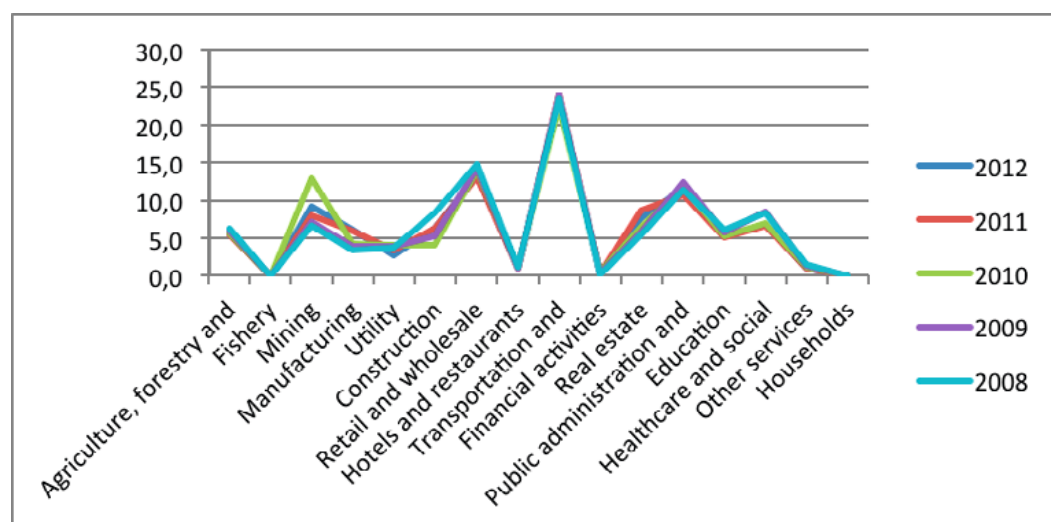
Object of this paper being Transbaikal region's economy, certain insight should be made into peculiarities of economic development of the region. Transbaikal region is located in the East-Siberian Federal district of Russian Federation, having total population of 1 087 479 people, as of January the 1st 2015. Population of the region has been declining over years, which is a negative trend in the regional economy. Total loss of population amounted to 48242 persons over ten years' time, or more than 4%, which is a considerable amount taking into account total area of the region which is 431,500 km<sup>2</sup> or 10% of the whole country's area. As compared to the size of the area total population constitutes only 0,7% of country's population. As of 2012 regional GRP was 225, 5 billion rubles, which was 52 place among all 83 Russian regions, and 49th place by the GRP per capita.

The region is said to have certain competitive advantages, fist of them being abundant resources of mineral wealth. It ranks second in Russia by the reserves of uranium, has 20% of all Russian copper reserves, 2% of coal reserves, 38% of fluorite etc. The region is also rich in timber. Second competitive advantage of the region is its transitory geographical position and its closeness to People's Republic of China and Mongolia. Nevertheless over years is has become clear that these competitive advantages do not fully contribute to the economic performance of the region which had been very poor.

Gross regional product and GRP per capita grew in parallel patterns over 5 years 2008-2012, with total growth at the level of 62% (see Appendix, Table 1, Figure 1).

The structure of GRP during a 5 year period between 2008 – 2012 shows that the main contribution to GRP has been made by transportation and communication (23% on the average), other important industries have been retail and wholesale and public administration (see table 1.1 Appedix).

Figure 1: Transbaikal region GRP structure in 2008 – 2012 (%)



The structure has been stable and there wasn't much deviation between the industries' shares in GRP. Thus the industries' average measures of contribution to GRP can be regarded as stable and the shares of contribution will come as weighs of industries' contribution. Industries with contribution less than 2% will be left out of further analysis, so only 11 main industries will be taken into account (see Table 2, Appendix).

## MEASURING SPECIALIZATION

Next step is to regroup the industries. Local infrastructural or supporting industries are transportation and communication, utility (if not exported), construction, retail and wholesale, hotels and restaurants, real estate, education, healthcare and public administration. These industries make up 78,1% of the GRP. This measure alone is a cause for concern, it means that value is created in the region and is not exported, but consumed locally thus eliminating the opportunity to receive additional profit.

Industries with export potential include agriculture, mining and manufacturing. They make up 19,1% of the GRP. At this step it is necessary to define the area of specialization of the economy among the three industries, as the industry with higher location quotients. It is assumed that the base year is identical in all of the above variables.

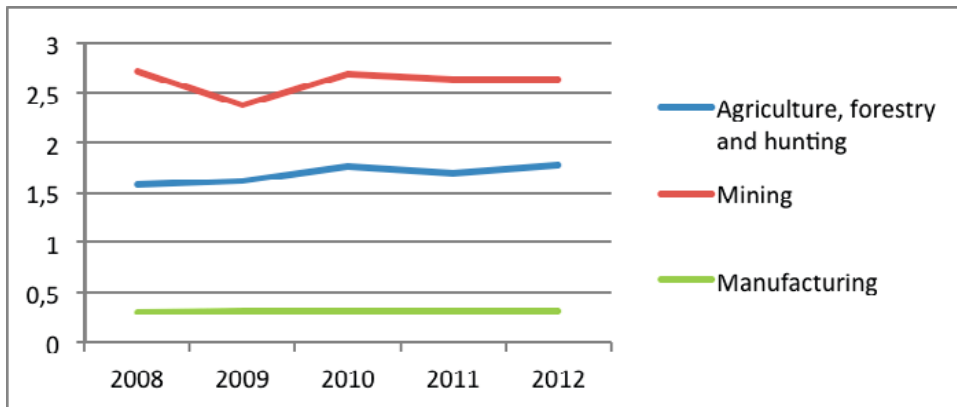
*Table 2: Location quotients for potential specialization industries 2008 – 2012.*

Industry	Total employment in industry i	Total employment	Local employment in industry i	Total local area employment	Location Quotients
2008					
Agriculture, forestry and hunting	6035	71003,1	62,9	465,8	1,588734
Mining	1350	71003,1	24,10	465,8	2,721204
Manufacturing	11715	71003,1	22,90	465,8	0,297969
2009					
Agriculture, forestry and hunting	5761	69410,5	64,5	479,6	1,620346
Mining	1388,2	69410,5	22,80	479,6	2,376998
Manufacturing	10619,8	69410,5	22,60	479,6	0,307991
2010					
Agriculture, forestry and hunting	5384,9	69933,7	63,9	470,5	1,763803
Mining	1398,7	69933,7	25,3	470,5	2,688579
Manufacturing	10630	69933,7	22,8	470,5	0,318807
2011					
Agriculture, forestry and hunting	5455,958	70856,6	62,3	478	1,692659
Mining	1417,132	70856,6	25,2	478	2,635983
Manufacturing	10628,49	70856,6	23,3	478	0,324965
2012					
Agriculture, forestry and hunting	5222,814	71545,4	61,8	475,6	1,780015
Mining	1430,908	71545,4	25,1	475,6	2,638772
Manufacturing	10731,81	71545,4	23	475,6	0,3224

Three industries location quotients dynamics over 5 years shows a strong and growing role of mining in the regional economy.



Figure 2: Location quotients for agriculture, mining and manufacturing between 2008-2012



In recent years only mining was an industry of specialization, manufacturing and agriculture employed significantly less people thus they are not effective enough.

In the economic safety model the weights attributed to the industry indicators will be constant. Indicators will be grouped into three categories: local infrastructural industries (8 industries), potential specialization (agriculture and manufacturing) and mining (a specialization industry). These groups will have different level of significance for regional economic safety, to show this significance the weight of the area of specialization will be multiplied by the average measures of their locality quotients:

$$ES_t = \sum^n z_{tn} \times \frac{1}{n} \sum_{i=1}^n RR_{tlocali} + z_{ps1} x RR_{t1} + z_{ps2} x RR_{t2} + z_s x RR_{t3}, \quad (4)$$

$$ES_t = 78.1 \frac{1}{n} \sum_{i=1}^n RR_{tlocali} + 5.7 x RR_{t1} + 8.7 x RR_{t2} + 4.7 x RR_{t3} \quad (5)$$

$$ES_t = 78.1 \frac{1}{n} \sum_{i=1}^n RR_{tlocali} + 5.7 \times 1.7 RR_{t1} + 8.7 \times 2.6 RR_{t2} + 4.7 \times 0.36 RR_{t3} \quad (6)$$

Variable measures in the model are average rate of return data on industries in a given year. These industries average yearly rates of return as a measure of added value haven't been stable over years (see Table 4, Annex). Some industries had negative values of rates of return (agriculture), some industries were extremely successful (transportation and communication). Thus measurement of economic safety will be as follows:

Table 3: Measurement of Transbaikal region's economic safety in 2008-2012

	2008	2009	2010	2011	2012
ES	584,347	399,688	865,477	987,86	845,518

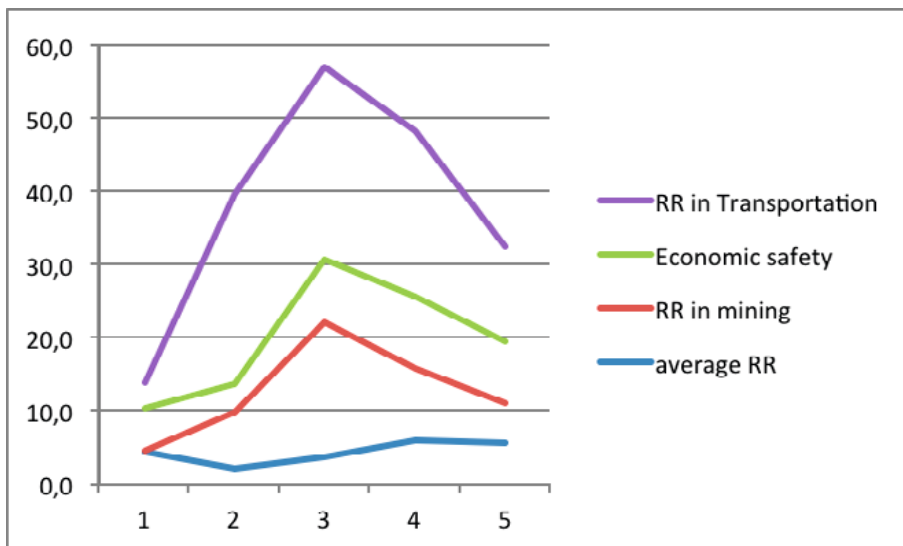


Figure 3: Economic safety values in 2008-2012



Comparing the dynamics of economic safety with dynamics of rates of return in industries we can see that there is strong correlation between rates of return in mining and economic safety measure.

Figure 4: Rates of return in industries and economic safety value correlation



Thus we can conclude that economic safety is closely related to economic performance of regional specialization industry and namely the average yearly rates of return of that industry.

As the next step we explore deeper reasons behind the poor performance of mining in the region. Mining in the region depends on internal and external factors. External factors include first of all the world market prices on extracted resources as well as some political and environmental issues and regulations within the industry at the national level. These factors may be threats to industry's development thus being threats to regional economic safety. These threats arise from both outer and inner environments



of the economy, for instance political issues, legislation, international affairs etc., and they can be classified by their gravity and affectability. Thus they can cause very serious effects for the economy reflected in a drastic fall of basic economic indicators, they can be obstacles to realization of economic potential of the industry and the region.

Climatic conditions affect the economic performance greatly, but we have noticed that this kind of influence doesn't come from every direction. Harsh though climatic conditions may be, the economy can still perform greatly and be highly independent and self-sufficient. In our opinion the main economically perceptible effect of the climatic conditions is the following: economies based on production (with an area of specialization based on production of certain goods) depend on the supply and cost of energy. Regional economies may have different areas of specialization, but if the region specializes in a certain kind of industry with high energy consumption then the region's economy will depend on the cost of energy supply, which in turn depends on the availability of cheap energy sources (hydropower, nuclear power). The other way climate impacts the economy is also connected with energy consumption and costs, it is central heating infrastructure and subsequent costs. So in colder climates heating constitutes a substantial part of GRP. This means regions with colder climates need to have an access to cheaper energy sources to survive, otherwise the economy will perform poorly, production costs for goods and services will be higher which will result either in lower rates of return or loss of competitiveness in outer markets.

This kind of dependence of economic safety on energy cost and consumption in the region can be shown on a scatter plot chart with energy costs marked on the horizontal axis and energy consumption marked on the vertical axis with resulting zones of scattered dots representing different regions of the Russian Federation.

The graph field thus can be divided into areas with different levels of threat from the energy factor, the area with high energy costs and high energy consumption will be the gravest threat to regional economy. The area with both indicators low will be a favorable condition.

The area A – is extremely favorable, it combines cheap energy and low consumption, these are regions with warmer climates and advancement of less power consuming industries (e.g. Moscow and Moscow region).

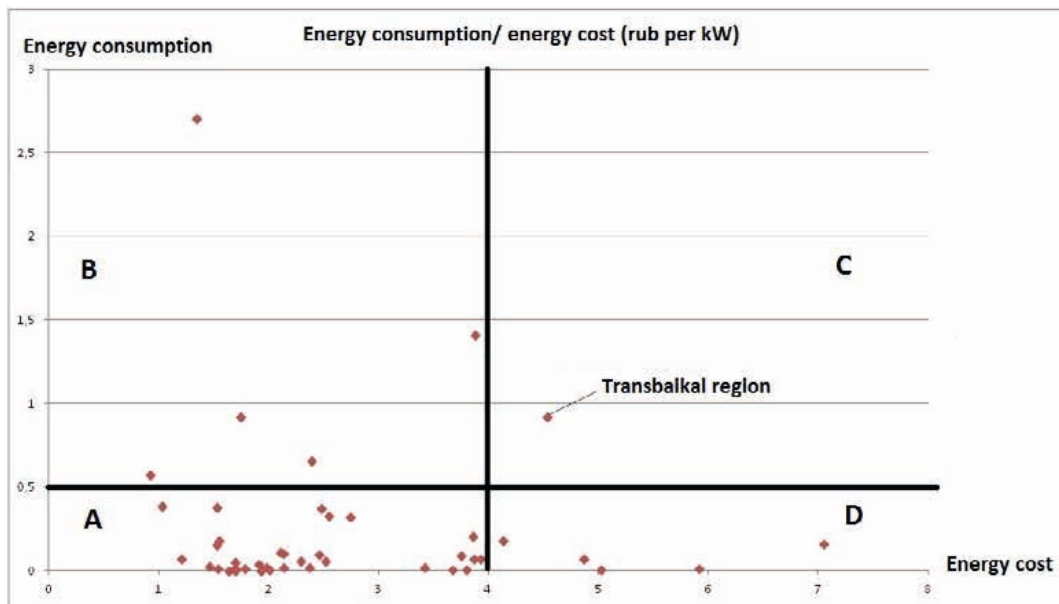
Area B – is less favorable, here there are regions with colder climate, but still developed power-consuming industries and access to cheaper energy (Tyumen region).

Area C – is unfavorable, as it features high energy costs and power consuming industries (Transbaikal region).

Area D – is also unfavorable, it features extremely high cost of energy altogether with energy efficient industries.



Figure 5: Russia's regions energy factor allocation



The C area is least favorable, because it combines both high energy consumption and high energy cost. Industries in this area are less likely to succeed and companies to break even have to raise the prices, thus making their goods uncompetitive.

The economy of Transbaikal region is in highly dangerous situation because there is no access to cheaper energy sources; all energy produced in the region comes from coal burning power plants which is not only expensive but also ecologically unsound. At the same time the area of specialization in the region is mining, namely metal ore mining and processing, and it's one of the most energy inefficient industries, besides the temperatures in the region are low most of the year (9 months) and so all kinds of premises need a lot of heating.

Moving from one energy factor area to another would be favorable and the key factor in moving is technology and investment. This dangerous situation has recently resulted in a chain of bankruptcies of specialization enterprises and rising levels of unemployment, population loss etc. Some mining enterprises even claim that the production costs of their goods is higher than in global market which makes their goods only uncompetitive and but even unprofitable.

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## APPENDIXES

*Table 1:* Transbaikal region GRP over the period of 2008-2012

	2008	2009	2010	2011	2012
GRP (million rubles)	140302.0	148587.9	166742.5	203869.0	225504.2
GRP per capita (rubles)	126362	133974	150549	184869	205511

*Figure 1:* Transbaikal region GRP over the period of 2008-2012

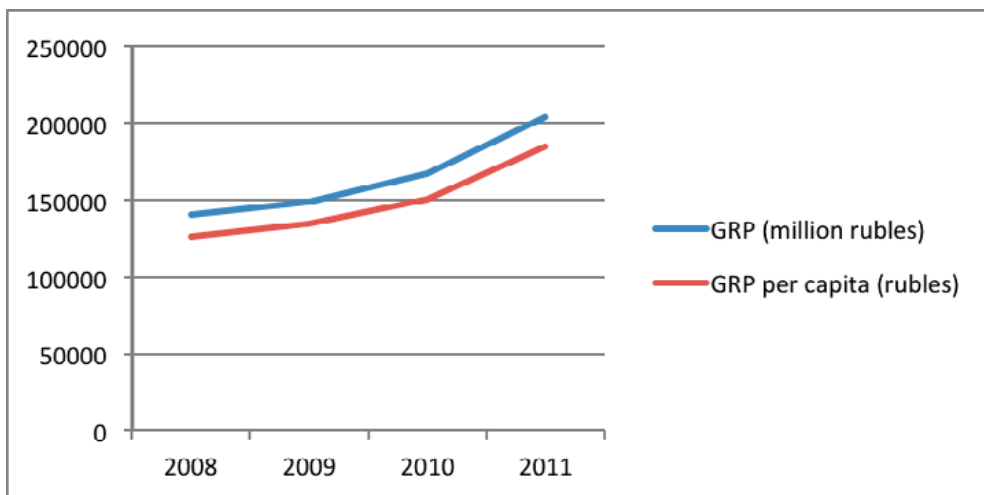


Table 2: Transbaikial region GRP structure in 2008-2012.

	Agriculture, forestry and hunting	Fishery	Mining	Manufacturing	Utility	Construction	Retail and wholesale	Hotels and restaurants	Transportation and communication	Financial activities	Real estate	Public administration and military office	Education	Healthcare and social care	Other services	Households
2012	5,5	0,0	9,1	6,0	2,6	6,3	13,2	1,0	23,7	0,3	7,7	11,5	5,3	6,8	1,0	0,0
2011	5,4	0,0	8,0	6,0	3,5	6,3	13,1	1,1	24,1	0,3	8,7	10,7	5,1	6,7	1,0	0,0
2010	5,5	0,0	12,8	4,2	4,0	4,1	13,9	1,2	22,5	0,5	6,4	11,7	5,2	6,9	1,1	0,0
2009	6,0	0,0	7,1	4,0	3,9	5,3	14,3	1,1	24,1	0,4	5,8	12,4	5,8	8,5	1,3	0,0
2008	6,3	0,0	6,5	3,4	3,7	8,2	14,7	1,1	23,5	0,1	5,4	11,3	6,0	8,3	1,5	0,0

Table 3: Average shares of industries in GRP (2008-2012)

	Agriculture, forestry and hunting	Fishery	Mining	Manufacturing	Utility	Construction	Retail and wholesale	Hotels and restaurants	Transportation and communication	Financial activities	Real estate	Public administration and military office	Education	Healthcare and social care	Other services	Households
	5,7	0,0	8,7	4,7	3,5	6,0	13,8	1,1	23,6	0,3	6,8	11,5	5,5	7,4	1,2	0,0
	X1		X2	X3	X4	X5	X6		X7		X8	X9	X10	X11		

Table 4: Rates of return of Transbaikial region's industries (2008-2012)

Year	Agriculture, forestry and hunting	Fishery	Mining	Manufacturing	Utility	Construction	Retail and wholesale	Hotels and restaurants	Transportation and communication	Financial activities	Real estate	Public administration and military office	Education	Healthcare and social care	Other services	Households
2008	1,4	0,0	0,1	2,9	-0,07	3,6	3,4	3,3	3,4	27,7	13,2	-2,1	0,3	5	9,6	0,0
2009	-9	0,0	7,5	4	-5,2	1,5	3,7	7,5	25,8	-3,9	-2,1	0,2	-3	7,3	0,9	0,0
2010	-7,3	0,0	18,4	2,1	2,3	4,1	3,4	6,6	26,2	-12,2	0,9	10,0	4	7,6	-7,4	0,0
2011	-8,9	0,0	9,6	6,2	5,6	2,1	3,5	6,5	22,5	14,2	-0,5	19,7	-1,6	14,7	4,6	0,0
2012	-8,2	0,0	5,4	4,8	-9,9	2,5	4,4	10,2	12,8	16,1	1,7	20,5	4,9	18,2	5,6	0,0



# Emotions and Moral Judgment in Price Fairness Perceptions

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## *ABSTRACT*

Price fairness is, and has been for some time a promising field of research. And while the work on its possible antecedents and consequences reached an extensive insight with growing body of theoretical background, shopping scenarios checked and industries introduced to price fairness theory, several challenges remain unmet. Present paper focuses on some of those areas, exploring (1) the impact and array of emotions leading to perceptions of price fairness, (2) the role of individual's moral judgment capacity as well as (3) constructing and defining a broad array of possible consequences. Conceptual work is based on equity theory combined with attribution theory and reviews the current findings and proposes future research guidelines.

## INTRODUCTION

The concept of price fairness is here. And it has been here for quite a while. From the early work of Huppertz, Arenson and Evans (1978) to latest discoveries in judging the price fairness of new products (Kuester, Feurer, Schuhmacher and Reinartz, 2015) and price fairness perceptions in times of crisis (Ferguson, Ellen and Piscopo, 2011; Bradford, Huq, Jackson and Roberts, 2014). Defined as a consumers' perception and its related emotions of how fair, acceptable and reasonable is the difference between two prices (Xia, Monroe and Cox, 2004), price fairness still presents itself with several challenges for marketing theory and practice. Present paper focuses on some of those challenges and offers conceptual propositions and indications for future research.

In the first part we construct an overview of price fairness theory, describing the Equity theory (Adams, 1965) which has in many cases proved to be an excellent framework for price fairness research. We also briefly discuss the antecedents of price fairness perceptions and introduce the four groups of factors, as proposed by Xia and colleagues (2004).

The second part of the paper focuses on the role of emotions in price fairness perceptions. There is a widespread agreement, that emotions play an integral part in price fairness perceptions. Xia and colleagues (2004) note, that the direct response to negative judgments of fairness, actually stems from the emotions, that accompany cognitive assessment of price comparison. Such emotions stimulate behavioural response towards monetary compensation, self-protection in future encounters with the (unfair) seller, as well as coping with current negative emotions (*ibid.*). What remains unclear is what kinds of emotions do consumers experience and whether their intensity increases alongside the severity of perceived unfairness or does the intensity of emotional reaction lead to more severe price fairness assessments.

The third part of our discussion focuses on currently unknown role of consumers' moral judgment capability. We review and imply possible implications of moral judgment both in assessing the price differences, ergo, its role in price fairness perceptions, as well as its role in managing the possible behavioural outcomes.

While the role of emotions and moral judgment may explain differences in price fairness perceptions as they arise, the last part of our paper narrows on the consequences of such incidents. There were some attempts on explaining and listing the consequences of unfair prices (Kahneman, Knetsch, and Thaler, 1986; Bougie, Pieters and Zeelenberg, 2003; Xia, et al., 2004; Malc, Mumel and Pisnik, 2014) providing more or less insight into the topic. Those insights are presented and discussed.

## EQUITY THEORY IN PRICE FAIRNESS RESEARCH

Equity theory (Adams, 1965) is a theory of social comparison. The main premise states that individuals compare and evaluate the ratio between their investment and return to the ratio of investment and return of another individual in the exchange context (Martins and Monroe, 1994). Such exchanges may turn out to be either equitable to one-another, or non-equitable (either with the given advantage to one, or the other individual). The theory originates from the field of organisational psychology, and it was first applied to the price fairness research by Huppert and colleagues (1978) to investigate, whether price differences for different consumers of the same product might evoke perceptions of price fairness and whether this would have any effect on shopping intentions. Its' main value lies in the fact that unlike other theories, such as the theory of procedural justice (Maxwell, 2002), transaction utility theory (Thaler, 1983) and prospect theory (Tversky and Kahneman, 1979), focuses on both instances of non-equitable outcomes: advantaged as well as disadvantaged. When an individual encounters a disadvantaged price discrepancy,



they act on feelings of sadness, disappointment and anger to achieve some reparations and restoring the equity. On the other hand, an encounter with an advantaged price discrepancy might produce feelings of guilt and/or shame that aim to do exactly the same – motivate behaviour to restore the equality (Martins and Monroe, 1994).

Equity theory also provided some important insights into the antecedents of price fairness perceptions. Xia and colleagues (2004) offer a general categorization of such factors: (1) variables that determine the exchange context; (2) the rationale for pricing decisions; (3) consumers' previous experiences about pricing practices; and (4) general knowledge and beliefs about pricing practices. The first group of factors connects to the principles of Equity theory and is most broadly recognized in price fairness research (Bolton, Keh and Alba, 2010; Xia and Monroe, 2010; Gielissen, et al., 2008; Campbell, 2007; Bolton, Warlop and Alba, 2003, Malc et al., 2014). This category includes every piece of information through which we can describe the context of the exchange: transaction similarity, consumers, sellers, products, etc.

## PRICE FAIRNESS AND EMOTIONS

Emotions tend to be the key aspect of price fairness perceptions, rooted in the widely recognized definition of price fairness by Xia and colleagues (2004). Previous research identified that price fairness perceptions relate to feelings of disappointment, sadness, anger and in the cases of advantaged inequality even guilt (ibid.). Yet, to our knowledge no previous work focused on confirming the occurrence of these emotions, let alone defining their role in perceiving price fairness and reacting to those perceptions. However, there are some indices of their role from other fields of study. Zielke (2011) for instance notes that price-level perception influences shopping intentions negatively through increased feelings of contempt, shame, and guilt. Verduyn and Lavrijsen (2015) discuss the persistence of various emotions, indicating that sadness (as a relevant emotion for price fairness research) lasts the longest from 27 emotions tested in their study. They also concluded that persistent emotions are typically triggered by events of high importance, which may have useful implications for changing prices or pricing strategies of highly preferential products that carry higher risk for the consumer. In the current view on theory of price fairness emotions codetermine price fairness assessment on one hand and also trigger the behaviour on the other hand (Xia, et al., 2004). While we agree with their motivational role in forming of behaviour, we propose that price fairness perceptions result in emotional appraisal of the context in which the price discrepancy occurred.

*P<sub>i</sub>: In a situation of price discrepancy the immediate emotional response leads to the cognitive assessment of price fairness and triggers the reaction.*

## PRICE FAIRNESS AND MORAL JUDGMENT

Thiroux and Krasemann (2012) define morality as a field, concerned with how people treat each other and determine what is good and what is wrong. And despite the thorough research work that enabled us to understand the factors and consequences of price fairness perceptions, there has been no study considering the role of moral judgment in this regard. We argue that moral judgment should be included in price fairness models.



The classical decision making models were based on *the assumption of rational individual* (Sternberg, 1996). Such an individual possesses all the required and relevant information, is absolutely sensitive to subtle differences between the various possibilities, and is fully rational as well as objective in all stages of the decision process (Slovic, 1990). Subsequent authors, refuted such an ideal, and replaced it with a more achievable description of bounded rationality (Simon, 1957). The constraints of rational individual come from the opposite side of the spectrum – the emotional part. And what seemed to be unacceptable for centuries, is clear for some time now: emotions play an integral part of decision making, including moral judgment.

Question may arise, whether this is a positive or negative factor for anyone affected by moral judgments. As Pizzaro (2000) describes, the emotions have been considered detrimental to moral reasoning and moral judgment and as such should be dismissed in dealing with moral situations. Yet on the other hand he counters this view of emotion with a statement that emotions may actually aid moral deliberations, through motivating people to make a judgment and focusing them on the dilemma at hand. Damasio (1994) also argues that the decision-making process can actually be facilitated by emotions. Such claims gain support in the form of neuro-scientific studies suggesting that morally challenging situations evoke instant feelings of approval or disapproval (Greene and Haidt, 2002) and that moral reasoning merely explains those feelings post-hoc (Chen, et al., 1996; Tetlock, et al., 2000).

As we have already proposed in the previous part of present paper, emotions are a defining element of price fairness perceptions. They accompany the cognitive assessment, which in turn, is a moral judgment on the reasonability, acceptability and justifiability of an observed price difference.

*P<sub>2</sub>: Given a perceived price difference, the moral judgment capability moderates the relationship between emotional response and cognitive assessment.*

Furthermore, the collaboration of emotions and moral reasoning in price fairness perceptions could define the behavioural reaction of a consumer, moderating the preferable choice of repercussion towards the seller. As Xia and colleagues (2004) propose and Malc and colleagues (2014) report in their study, the intensity of perceived price (un)fairness leads to more severe behavioural acts – ranging from negative word of mouth, to aggressive reactions (see also Bougie, et al., 2003). Most of the research work in the field of moral judgment makes use of moral dilemmas, developed by Kohlberg (Kohlberg and Hersh, 1977) that depict two unfavourable outcomes, asking the participant of the study to decide and pick one of them. The situations that initiate price fairness perceptions, provide several possible outcomes (see next part of the paper) – some more favourable than the others. Whether an individual will choose to remain calm, reasonably assessing the situation at hand, or burst into a vengeful vandalism is a choice. And it is a choice that we believe might be influenced by moral judgment capability.

*P<sub>3</sub>: Moral judgment moderates the reaction to perceived price fairness leading to different behavioural outcomes.*

## BEHAVIOURAL CONSEQUENCES OF PRICE FAIRNESS PERCEPTIONS

Ever since Huppertz and colleagues (1978) applied the concept of price fairness from the Adams' (1965) Equity theory, discovering that price fairness perceptions influence the consumers' intention to buy, the list of possible consequences has become an extensive array of behaviours that pose a threat to the sellers and their businesses. Among some of those consequences are negative word of mouth, complaints and loss of trust (Xia, et al., 2004), dissatisfaction (Hermann, Xia, Monroe, and Huber, 2007; Oliver & Swan, 1989), negative perceptions of product value (Xia, et al., 2004), and also aggressive reactions while in some cases even



vandalism (Bougie, et al., 2003). Xia and colleagues (2004) proposed a classification of the consequences grouping them into three groups, based on their severity: no action, behaviours of self-protection and acts of revenge.

When the perceived price unfairness is low, and/or the consumer assumes that taking action would not benefit him in any way, they do not react directly (Urbany, Madden and Dickson, 1989). When they perceive the price discrepancy as unfair, leading to feelings of disappointment and regret, they aim for self-protection. This results in some forms of harmful behaviour towards the seller, such as complaints, requests for refunds, negative word of mouth and choosing another seller in future purchases (Xia et al., 2004). The last group of behaviours includes behaviours that feed on feelings of anger. In such incidents consumers take revenge on the seller, nevertheless such actions might have negative effects on themselves as well (Kahneman, et al., 1986).

Malc and colleagues (2014) tested this proposition with a limited list of behaviours. While their study did not unanimously confirm this classification, the trend was salient – the higher the perceived price (un)fairness, the more salient were the preferred behaviours. We propose a construction of a detailed and thorough list of likely behaviours, originating from systematic qualitative research and quantitative confirmation.

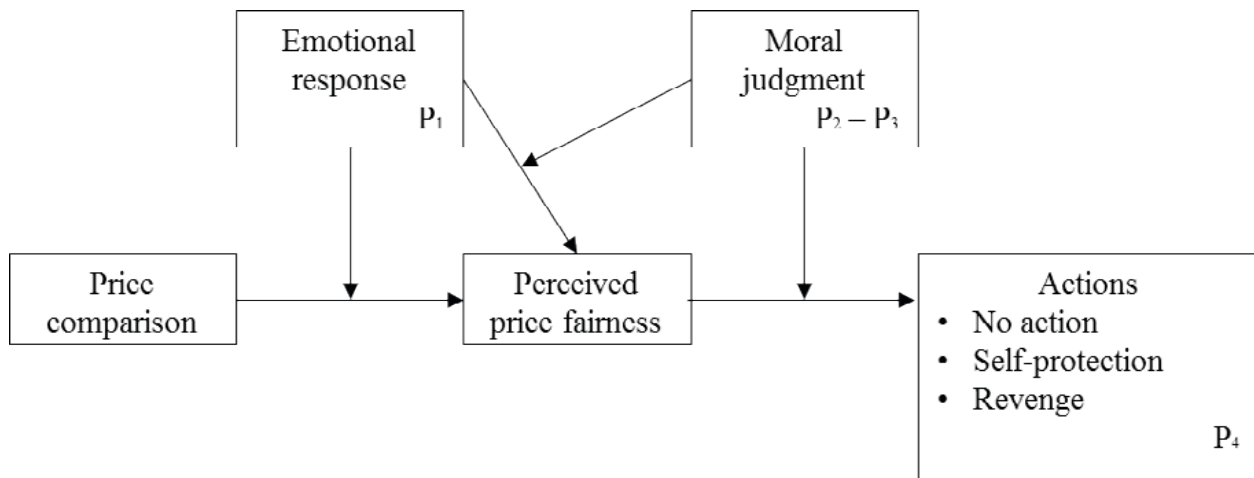
*P<sub>4</sub>: When the price discrepancy evokes perceptions of increasing price unfairness, consumers turn to more severe types of behaviour.*

## CONCLUSION

The purpose of present paper was to present some new points of view to the field of price fairness. We have discussed the moderating role of emotions and moral judgment in forming of price fairness perceptions, building on work of several authors in various disciplines. We also discussed the current findings on the consequences of such perceptions and suggested some implications for future research.

To conclude we present the expanded model that builds on the work of Xia and colleagues (2004) in figure 1.





*Figure 1:* **Proposed expanded model of price fairness (Xia, et al., 2004) with the moderating variables: type and intensity of emotional response and moral judgment capability.**

The implications of our paper are primarily theoretical, although they promise practical value as well. The expanding field of knowledge about price fairness continuously reveals new opportunities and with our propositions we aim to do the same. Despite several challenges that need to be addressed in the future (e.g. the conceptual confusion related to the large number of implicit theories on what a fair price should be, and currently unexplainable tendency of consumers to forgive the unfair sellers) the better understanding of role of emotions and introduction of moral judgment might unveil some of the missing answers. The main value for marketing and pricing professionals might present itself in the fact that moral judgment can be influenced and addressed when incidences of perceived price unfairness occur. Through careful and precise training of selling staff such incidents could be alleviated. However, dissolving the situation might not be as effective as preventing it in the first place, through well differentiated segmentation and positioning, and as Xia and colleagues suggest (2004) also through decreased exchange similarity in light of Equity theory.

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# Tax Policy and Income Inequality in the Visegrad Countries

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## *ABSTRACT*

The financialisation of economies is believed to be the primary cause of the increase in income inequality in the world, on a scale unseen for over 30 years. One can hypothesise that it is the state that is responsible for the widening inequality, the state that has not sufficiently used the redistributive function of taxation. The purpose of this paper is to study the impact of tax policy on income inequality in Poland, the Czech Republic, Slovakia and Hungary. The Visegrad countries have, in the last several years, carried out some controversial experiments with tax policy. This applies specifically to the flattening of tax progressivity or its replacement with a flat tax, which led to the weakening of the income adjustment mechanism. The imbalance between income tax and consumption tax has contributed to perpetuating income inequality. The verification of tax systems carried out during the recent financial crisis has forced the countries covered by the research to implement tax reforms. The introduced changes caused various fiscal and redistributive effects. Analyses show that the changes in income taxation and an increase in the consumption tax rate had the most negative impact on the income and asset situation of Hungarians.

*Keywords: tax, tax policy, income inequality, Gini coefficient*

## INTRODUCTION

The issue of income inequality is holistic in nature. It can be seen in the context of social justice, equality or dignity. Galbraith's „*The Good Society: The Humane Agenda*” understands the title “good society” as achievable conditions in which all its citizens must be afforded personal freedom, provided with basic material existence requirements, racial and ethnic equality and a chance for a dignified life. According to Galbraith [1999, p. 13], “nothing more effectively limits freedom as the total lack of money, or restricts this freedom as the scarcity of money”. By no means is the author an advocate of equality of income distribution, since it is incompatible with human nature and motivation of the modern economic system. He claims, however, that “the modern market economy allocates wealth and divides income unequally using socially perverse and functionally harmful methods” [Galbraith 1999, p. 55].

In recent years, the phenomenon of social stratification has intensified throughout the world. The OECD report shows that the disparity between rich and poor reached the highest level in 30 years [OECD, 2011]. The financialisation of economies and bad tax policies are considered to be the reasons for this phenomenon. In the United States, which have the greatest income inequality among developed countries, the Congressional Budget Office (CBO, 2011, p. 9) found that the main cause of widening income inequality was the increase in the concentration of income before taxes and social transfers; but it also indicated that it was the tax policy that has led to a deepening of these inequalities by favouring wealthy taxpayers. In the EU, the phenomenon of social stratification affects mostly post-communist countries and those countries that follow the Anglo-Saxon model (Spain, Portugal, Great Britain, Greece).

Bridging the gap between rich and poor requires an effective mechanism for income adjustment. Taxes, especially progressive income tax, as well as social transfers can serve this purpose. A tendency, seen in the Visegrad countries, to weaken the redistributive function of tax motivated me to write this paper. The purpose of this paper is to study the impact of tax policy on income inequality in Poland, the Czech Republic, Slovakia and Hungary. The analysis of this phenomenon begins in 2003, as an attempt was made to capture all relationships before the studied countries had entered the EU and to track changes which occurred due to the membership.

## REDISTRIBUTIVE FUNCTION OF TAXATION

Tax is usually firstly considered in the fiscal context. This approach is justified, because in the modern market economy tax revenues are the primary source to meet the financial needs of the state. This paper focuses its attention on the economic importance of tax, which lies in the fact that the effect of taxation is a change in the income and asset situation of taxpayers, which affects their behaviour, business decisions, consumption decisions, saving decisions, etc. [Owsiak, 2005, p. 173]. Hence, fiscal policy goes far beyond collecting taxes; it affects social and economic spheres. Income inequality in a society is a phenomenon determined by fiscal policy. The State has the means to intervene, such as fiscal instruments, in order to reduce excessive disparities in income. One should note, however, that views on state intervention expressed in literature are divided. For example, the liberal doctrine considers income inequalities as a factor conducive to economic growth. For this reason, Smith was opposed to the introduction of laws governing the privilege of the poor, seeing them as a restriction of competition and labour mobility [Blaug, 1994, p. 70]. The relationship between privileges of the poor and economic growth has not been proven. The experience of many countries shows, however, that excessive income inequalities cause social conflicts and political turmoil.



According to Galbraith [1999, p. 59] progressive income tax plays a crucial role in the implementation of reasonable and civilised distribution of income. The empirical verification of the relationship between income redistribution and income inequality was carried out for many countries, including Japan (Kitamura, Miyazaki, 2014), Norway (Thoresen, 2004), Finland (Riihelä et al., 2008), Romania (Voinea & Mihaescu, 2009) or the EU15 (Verbist, Figari, 2014). One should also take into account the experience of Japan, where between 1985 and 2000, the Gini coefficient rose by 13%, while the OECD average was 7%. Two reasons for this phenomenon have been identified: increased proportion of low-paid non-regular workers and a decrease in income tax progressivity. The number of tax rates was reduced from 15 in 1986 to 4 in 1999, and the highest rate was reduced from 70% to 37% (OECD, 2008, pp. 93-95). Within the framework of the next reform of the tax system, the highest income tax rate, however, was increased to 50% (Hein, 2010). In 2009<sup>1</sup>, the Gini coefficient (before tax) stood at 0.488, and after taking into account taxes and transfers decreased to 0.336.

Theoretical and empirical studies support the conclusion that income tax based on progressivity is an essential instrument of income redistribution function. Meanwhile, the evolution of tax systems in the Visegrad countries has led to a significant flattening of tax progressivity (Poland) or its replacement by a flat tax (Czech Republic, Slovakia, Hungary) and an increase in the indirect tax burden. The lack of resilience of public finances and economy to the shock caused by the financial crisis forced recent tax reforms, which resulted in a move away from flat tax. In the Czech Republic, although officially a flat tax is maintained, as of 2013 a solidarity surcharge of 7% was introduced for income in excess of four times the average annual salary, which has the hallmarks of a progressive tax, while Slovakia abandoned the flat tax, returning in 2013 to progressivity with two tax rates of 19% and 25%.

## PHENOMENON OF SOCIAL STRATIFICATION IN THE COUNTRIES STUDIED

In order to identify income inequality the following indicators were used: the quintile share ratio ( $S_{80}/S_{20}$ ), the Gini coefficient, the at-risk of poverty and social exclusion rates (RP-SE), the material deprivation rate (MDR). On the basis of data collected in Table 1, it can be concluded that during the period considered the highest level of income inequality was seen in Hungary. Despite the fact that the Gini coefficient (before social transfers, excluding pensions) decreased between 2005 and 2013 by 1.7 pp, it is close to 35%. The sharpest decrease in inequality took place in Poland (by 7.2 pp), but still the Gini coefficient is only 0.9 pp lower than in Hungary. In Slovakia it is approx. 28%, in the Czech Republic approx. 29%, where, in addition, income disparity is consistently getting smaller. The opposite was the case in Hungary, where between 2010 and 2013 the Gini coefficient increased by 1.9 pp. In this country we can see a strong correlation between changes in the distribution of income of the population and the introduction of a 16% flat tax in 2011. The research based on income quintile share ratio shows that in 2010 in Hungary the sum of income received by the 20% of people with the highest income was 3.4 times higher than the sum of the income received by 20% of the population with the lowest income. Moreover, in 2013, it was already 4.2 times higher. This ratio is also unfavourable for Poland, because the sum of the income of the highest quintile is nearly five times the sum of the income of the lowest quintile. In the Czech Republic and Slovakia the income quintile share ratio is approx. 3.5. Levels of income disparities in the Czech Republic and Slovakia are among the lowest in the EU and are similar to those in the countries that follow the Nordic model, e.g. Sweden, Finland or the Netherlands. Looking at the data from 2013 one can see that a move away from the flat tax in Slovakia and the Czech Republic combined with a decrease in the Gini coefficient and the level of social stratification. Also, in an earlier period,

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<sup>1</sup> Last year with available data; OECD database; <http://www.stats.oecd.org> (access date: 08.01.2015)

abandonment of the progressive tax system coincided with an increase in the level of income inequality in Slovakia and Hungary (Table 1). This relationship did not occur in the Czech Republic, which was caused by considering “super gross” salary, defined as gross salary plus social security contributions and health insurance paid by the employer, as the tax base. Another measure that will allow identification of the living conditions of the studied societies is at-risk of poverty and social exclusion rate, which is defined as the share of people with an equivalised disposable income (after social transfers) below the at-risk-of-poverty threshold, which is set at 60 % of the national median equivalised annual disposable income. The data collected in Table 1 indicate that Poland, the Czech Republic and Slovakia to a greater extent than Hungary cope with poverty reduction. In 2005-2013, the biggest changes took place in Poland and Slovakia, where the at-risk of poverty and social exclusion rates decreased by more than 19 pp. It should be mentioned that the problem of poverty in the Czech Republic was much smaller already in the initial year, i.e. 2005.

The equivalent income of 19.6% of the population was below the poverty line. In 2013, Slovakia got close to this level, but Poland and Hungary are still way above it. Despite the fact that the scope of poverty in Poland has decreased in recent years, as the above indicator shows, still approx. ¼ of the population remains below the poverty line. The situation is even worse in Hungary, where the problem of poverty or social exclusion has intensified since 2009, and in 2013, it already concerned every third person. In this context, a survey conducted by Eurostat regarding material deprivation, understood as the inability to afford several of the nine items considered in European conditions to be basic (Eurostat and Central Statistical Office, 2011, p. 7), due to the low income, is particularly interesting. The assessment of material deprivation varies depending on the adopted limit. If we define deprivation rate as the proportion of people who can not afford at least three items due to financial reasons, then situation of Hungary is significantly different than that in the other countries of the Visegrad Group. The rate, which in 2013 stood at 44.1%, was 28.2 pp higher than in the Czech Republic. Unlike the other countries, Hungary has not been successful in improving the living conditions. On the contrary, since 2011, the situation has deteriorated.



Table 1: Income inequality and poverty indicators in the Visegrad countries against income tax rates

Item	2005	2006	2007	2008	2009	2010	2011	2012	2013	Difference 2013 - 2005
<b>Czech Republic</b>										
Income tax rates	15, 20, 25, 32	12, 19, 25, 32	12, 19, 25, 32	15	15	15	15	15	15 (22) <sup>a)</sup>	
Gini coefficient	32.5	31.7	31.3	30.5	30.0	29.8	29.6	29.1	28.8	-3.7
S80/S20	3.7	3.5	3.5	3.4	3.5	3.5	3.5	3.5	3.4	-0.3
RP-SE	19.6	18.0	15.8	15.3	14.0	14.4	15.3	15.4	14.6	-5.0
MDR	22.7	19.7	16.4	16.2	15.6	15.1	16.1	16.8	15.9	-6.8
<b>Hungary</b>										
Income tax rates	18, 38	18, 36	18, 36	18, 36	18, 36	17, 32	16	16	16	
Gini coefficient	36.5	41.2	34.4	34.7	33.5	32.9	35.5	34.4	34.8	-1.7
S80/S20	4.0	5.5	3.7	3.6	3.5	3.4	3.9	4.0	4.2	0.2
RP-SE	32.1	31.4	29.4	28.2	29.6	29.9	31.0	32.4	33.5	1.4
MDR	39.7	37.4	38.6	37.1	40.3	39.9	42.2	44	44.1	4.4
<b>Poland</b>										
Income tax rates	19, 30, 40	19, 30, 40	19, 30, 40	19, 30, 40	18, 32	18, 32	18, 32	18, 32	18, 32	
Gini coefficient	41.1	38.7	37.3	36.3	35.1	34.7	34.5	34.2	33.9	-7.2
S80/S20	6.6	5.6	5.3	5.1	5.0	5.0	5.0	4.9	4.9	-1.7
RP-SE	45.3	39.5	34.4	30.5	27.8	27.8	27.2	26.7	25.8	-19.5
MDR	50.8	44	38.2	32.3	29.5	28.4	26.4	27.8	25.5	-25.3
<b>Slovakia</b>										
Income tax rates	19	19	19	19	19	19	19	19	19, 25	
Gini coefficient	31.7	32.3	28.2	27.3	28.3	30.0	29.9	29.1	28.3	-3.4
S80/S20	3.9	4.1	3.5	3.4	3.6	3.8	3.8	3.7	3.6	-0.3
RP-SE	32.0	26.7	21.3	20.6	19.6	20.6	20.6	20.5	19.8	-12.2
MDR	42.6	35.7	30.2	27.8	24.5	24.9	22.0	22.7	23.4	-19.2

<sup>a)</sup> From 2012, a 7% solidarity surcharge applies. Indications in the text.

Source: Eurostat.

## ASSESSMENT OF TAX POLICY ACCORDING TO ACTUAL OR EFFECTIVE TAX RATE

Variability and complexity of tax systems impede comparative analysis between countries as well as an analysis of one country in a time period. Hence the choice of the research method used in the further part of this paper, according to which the starting point for identifying the impact of tax policy on income inequality is an analysis of the implicit tax rates on consumption and labour as well as changes in the development of the effective tax rate in the Visegrad countries. This approach will enable us to compare the countries and draw conclusions.

The implicit tax rate (ITR) is a measure of the actual or effective tax burden imposed directly or indirectly on different tax bases (Eurostat 2014, p. 281 – 291). ITR on consumption is defined as all consumption taxes divided by the final consumption expenditure of private households on the economic territory (domestic concept). ITR on labour is the sum of all direct and indirect taxes and employees' and employers' social contributions levied on employed labour income divided by the total compensation of employees working in the economic territory. The estimates in Table 2 allow us to see an upward trend in the consumption tax in the Czech Republic, Poland and Hungary. Only in Slovakia the tax rate in the studied period has decreased by 3.6 pp. It should be added that since 2006, the rate was the lowest in comparison with the other countries.

Table 2: Implicit tax rates on consumption on labour in 2003 - 2012 in the Visegrad countries

Implicit tax rate	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Difference 2012 - 2003
<b>Consumption</b>											
Czech Republic	18.8	20.8	21.1	20.3	21.3	20.5	20.7	20.9	21.8	22.5	3.7
Poland	18.3	18.5	19.8	20.6	21.6	21.4	19.3	20.5	20.8	19.3	1.0
Slovakia	20.3	20.8	21.5	19.5	19.9	18.3	17.0	17.4	18.3	16.7	-3.6
Hungary	25.6	27.0	26.1	25.4	26.3	26.0	27.2	27.4	26.8	28.1	2.5
EU 27	19.7	19.8	19.7	19.8	20.0	19.6	19.1	19.7	19.9	19.9	0.2
<b>Labour</b>											
Czech Republic	41.7	41.5	41.3	41.1	41.7	39.9	37.6	38.4	39.0	38.8	-2.9
Poland	32.7	32.3	33.8	35.4	34.0	31.7	30.8	30.3	32.0	33.9	1.2
Slovakia	36.1	34.5	32.9	30.5	31.1	32.7	31.4	32.2	31.6	32.3	-3.8
Hungary	39.3	38.3	38.4	38.9	41.0	42.3	40.2	38.4	38.2	39.8	0.5
EU 27	35.6	35.4	35.4	35.6	35.8	36.0	35.4	35.4	35.8	36.1	0.5

Source: Eurostat (2014), *Taxation trends in the European Union, Data for the EU Member States, Iceland and Norway*, Statistical books, p. 255

- 257.

During the studied period, the highest implicit tax rate on consumption was recorded in Hungary; from 2007 it has also had an upward trend. In 2012, the ratio of consumption taxes to the final consumption expenditure of households in Hungary (28.1%) was higher by 11.4 pp. than the same ratio calculated for Slovakia (16.7%). From 2004, Slovakia has been the only country in the Visegrad Group with the implicit tax rate on consumption below the EU average. A relationship between recent changes in the consumption tax and poverty can be seen. In Hungary, with an increase in taxes on consumption, the material deprivation rate and the at-risk of poverty or social exclusion rate have also increased. It is worth mentioning that VAT in this country was characterised by high volatility. In 2003-2005, the rate of 25% applied. In the next three years, 2006 - 2007, the rate was reduced to





20% and then - from 2010 onwards - it returned to 25%. From 2012, a VAT rate of 27% applies in Hungary, the highest not only in comparison with other countries of the Visegrad Group, but also in comparison with other EU countries. The change of rates was accompanied by changes in the catalogue of goods and services taxed at a specific rate. Moreover, in 2011 and subsequent years, other taxes on goods and services were introduced in Hungary, i.e. public health product tax, telecommunications tax, culture tax, tax on the overground and underground network components, tax on car accidents and tax on insurance. A different situation can be seen in Slovakia, where the decreasing rate of taxation on consumption was accompanied by improvement in the living conditions of the population.

The implicit tax rate on labour has decreased between 2003 and 2012 in Slovakia and the Czech Republic, and has increased in Poland and Hungary. From 2004, the ITR on labour in Poland and Slovakia has been below the EU<sub>27</sub> average (36.1%). In 2012, the tax on labour in the Czech Republic and Hungary was higher than the EU<sub>27</sub> average - 38.8% and 39.8% respectively

The weakening of the income adjustment mechanism can also be seen on the basis of an analysis of the upper marginal tax rates (UMTR), adjusted for the impact of tax credits. The tax policy of 2003 - 2012 resulted in a decrease in UMTR in the Czech Republic from 28% to 20.1%, in Poland from 31.46% to 20.93%, in Slovakia from 38% to 16.45% and in Hungary from 55.87% to 20.32% [OECD].

Limiting the role of the state in using fiscal instruments leads to excessive income inequalities in society, and this in turn contributes to deepening poverty. This situation leads to an increase in social spending, which is one of the causes of budget deficits and expansion of the public debt. The hypothesis of the beneficial effects of a reduction in income taxes on the economy and society is difficult to prove. The presented analysis shows that the opposite is true. The largest increase in public transfers occurred in Slovakia and the Czech Republic. In 2003 in Slovakia, the share of social expenditure in GDP was 15.3%, while in 2009-2012 it was approx. 19%. In the Czech Republic, the change was smaller, i.e. from 18.5% in 2003 to 19.9% in 2012. In 2012, cash benefits in Poland amounted to 16.4% of GDP, and in Hungary to 17.8% of GDP (Eurostat).

## CONCLUSIONS

The tax policy implemented in the Visegrad countries in the last decade was flawed for at least two reasons. First of all - the problem of income inequality has intensified. Secondly - it resulted in a decrease in tax revenues, in a period of increased social spending. In 2003, cash benefits (excluding benefits in kind) were lower than the total tax revenue in all studied countries. The relationship between these categories was as follows: 93.6% in the Czech Republic, 95.8% in Poland, 80.1% in Slovakia and 65.8% in Hungary. In 2012, cash benefits were covered by tax revenues in Hungary (69.2%) and Poland (81.7%). As for the other two countries, the changes were so detrimental that social spending outweighs the tax revenues in the Czech Republic by 4.2% and in Slovakia, which experimented with the flat tax for the longest period, by 20.7%.

The income inequality is strengthened by the imbalance between income tax and consumption tax, seen in the countries of the studied group. One can believe that the return to tax progressivity in Slovakia and the introduction of solidarity surcharge in the Czech Republic is not only a way to increase the fiscal efficiency of tax, but is also caused by the fact that the redistributive function of tax has been acknowledged. Hungary was the country that, in response to the crisis, has changed its tax system the most, introducing several new taxes and fees and significantly reforming the existing ones. Radical and controversial tax changes allowed Hungary to keep its public finances in check, which in 2013 resulted in the Council of the European Union lifting the excessive deficit procedure against the country. This unfortunately has been done at the expense of an increased risk of poverty and social exclusion of the Hungarian society.



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# Social Responsibility – A Precondition of Requisite Holism in Corporate Governance and Strategic Management

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## *ABSTRACT*

Progressive organizations understand that their success depends on ethics of interdependence and the end of one-sided and short-term behavior. Both of them belong to systemic behavior and receive support from social responsibility of humans and their organizations, such as enterprises, countries, non-governmental organizations, or families. Methodologically, it can be supported also by De Bono's methods of 'lateral thinking', 'six thinking hats' and CoRT.

## THE SELECTED PROBLEM AND VIEWPOINT OF DEALING WITH IT

Hrast and Štefotič (2015) provide an Overview of standards, certification and awards on social responsibility. Their list is long. This means that there is no longer a problem of knowledge how to approach social responsibility, but rather a problem of understanding what social responsibility means and provides to humans and organizations. It may be helpful to make it clearer to participants of this conference. In India they have some regulation, but Mulej's experience with colleagues visiting the ICPE International centre for promotion of enterprises in Ljubljana, Slovenia, said a few months ago that their understanding of social responsibility was somehow limited to charity. In Slovenia, there is no requisitely holistic regulation of social responsibility, although the European Commission (EU, 2011) has urged EU member states to support it. We will not report about our efforts for drafting a national strategy for promotion of social responsibility here, but rather about the global conditions requiring it, and some details of our model how to make it happen.

## BRIEFLY ABOUT THE GLOBAL CONDITIONS REQUIRING SOCIAL RESPONSIBILITY

The internationally agreed definition of social responsibility is clear: the point of social responsibility lies in responsibility for one's impacts over society (ISO 26000 by ISO, 2010). It is about humankind's survival. We are trying to prevent a world war to which the world is being led by monopolies resulting from the neoliberal economic theory under its excuse that the totally free market is the best for humankind. The totally free market would be the best, unless ruined by monopolies' lack of social responsibility. Thus, wealth belongs to one single percent of humankind and only 15% of humankind live on more than six USD a day; millionaires make 0.2% of humankind (Mulej, Dyck, ed., 2014). Namely, the neoliberal economic theory that swears, but has no empirical evidence, to have in the totally free market the best way to well-being of all people, prohibited social responsibility; they see in it an obstacle to companies' freedom, while market is said to prevent their lack of honesty. Practice denied this statement; it generates monopolies: among 30 million investigated organizations less than 750 control 80% of the world market; tax heavens are hiding tremendous sums, said to be higher than GDP of US and Japan combined; natural resources are running out; nature is destroyed, making life unhealthy; currently about 30 ward are fought plus the global war against terrorism; 85 individuals have as much property as 3,5 billion people have combined; the 'economic killer' Perkins reports that governments, USA included, are only or first of all, at least, tools for profits of the few most influential companies to the detriment of people; the entire global debts reach 286% of the total global GDP (Japan 400%, USA and China around 220% - NYT (2015). Etc. More data are available, but there is no room. The world war is here, because the most influential ones live without their social responsibility for their impacts, without consideration of their interdependence with other and with nature, hence without requisite holism. They seem to hate their children and grandchildren; so short-term and narrow are criteria they are using for their decisions. (For details see: Hrast, et al., editors, 2013; Mulej, Dyck, editors, 2014; Mulej et al., 2013; Mulej, ed., 2013; Mulej, ed., 2014; Lebe and Mulej, editors, 2014).

Application of systemic – requisitely holistic behavior – via social responsibility – this is our suggestion for the way from this terrible global socio-economic crisis.



## INTERDEPENDENCE BETWEEN SOCIAL RESPONSIBILITY, (DIALECTICAL) SYSTEMS THEORY AND SUSTAINABILITY

Social responsibility became increasingly important in recent years, especially after a very long economic growth cycle had ended with 2008- crises.<sup>1</sup> During our research on social responsibility (SR) in 2009 we found on e-browser Google 25 million hits. On May 7<sup>th</sup> 2010 we found 116 million hits, and on June 27<sup>th</sup> 2011 137 million hits, in June 2012 beyond 400 million. Then we gave up our hope to read them; they are too many to read. Our selection shows the following situation:

- The simplest (and oldest) version of SR is *charity*, which is still important, but a small part of SR; it might only be a mask for real one-sidedness rather than requisite holism of behavior of influential persons and their organizations, concerning many other aspects/topics.
- *European Union* (EU, 2001) mentions officially four contents of SR (of enterprises): the point is in a free-will-based acceptance of the end of abuse of employees, other business partners, broader society, and natural preconditions of humankind's survival, beyond law. The new EU's (2011) definition is shorter: SR is responsibility for one's impacts on society and nature. It is also more obligatory: EU member states and big companies should promote SR as its role models – for clear economic reasons, i.e. to solve the current socio-economic crisis.
- In literature on *business excellence* one requires more – upgrading of its measures with SR (For overview see: Gorenak, Mulej, 2010). A bridge is also offered, identifying SR as the acceptable modern values/culture/ethics/norms (VCEN) of human behavior (Ženko, Mulej, 2008), and business excellence as a method leading to it in practice (SFPO, 2010).
- In further literature one sees connection between systemic thinking and SR (Cordoba, Campbell, 2008), but it differs in the authors' selected viewpoint from the one under discussion here.
- A fourth group of references links SR with *world peace* (Crowther, Caliyurt, 2004).
- ISO 26000 (ISO, 2010) requires a *holistic approach* (based on *interdependence*) and includes *seven content areas*: (1) organization, management and governance, (2) human rights, (3) labor practices, (4) environment, (5) fair operating practices, (6) consumer issues, and (7) community involvement and development.
- This requirement is supported by the following 7 *principles*:
  - 1. accountability,
  - 2. transparency,

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<sup>1</sup> We hope that the Mayo calendar is right: they predicted the end of the 'homo sapiens' phase in humankind's development and the beginning of the 'homo ethicus' since December 2012. This may be read as the end of the short-term and narrow-minded behavior of the influential people and the beginning of the long-term and requisitely holistic behavior, including the sustainable future and present times. The later includes social responsibility, in which European Union sees the way out from the current socio-economic crisis, including sustainability as a world-wide precondition of humankind's survival.



- 3. ethical behavior,
- 4. respect for stakeholder interests,
- 5. respect for the rule of law,
- 6. respect for international norms of behavior, and
- 7. respect for human rights (ISO 2010: 10-14).

To further develop the understanding and practicing of SR the most important in ISO 26000 are three groups of points with the number seven:

- 7 principles cited above (ISO 2010: 10-14).
- 7 core subjects (ibid: 19-68), cited above. They are interrelated and bonded with organizational governance of the organization in the center. Due to objective circumstances the organization decides where it puts more emphasis: ‘now’ on some core subjects and in different circumstances on the others. We find the two concepts linking them at least equally important:
  - 1. *interdependence*, and
  - 2. *holistic approach* (ISO, 2010: lines 896-900).
- Chapter 7 that suggests *7 steps of the procedure of introduction of SR into the organization*:
  - 1. The relationship of an organization’s characteristics to social responsibility,
  - 2. Understanding the social responsibility of an organization,
  - 3. Practices for integrating social responsibility throughout an organization,
  - 4. Communication on social responsibility,
  - 5. Enhancing credibility regarding social responsibility,
  - 6. Reviewing and improving an organization’s actions and practices related to social responsibility, and
  - 7. Voluntary initiatives for social responsibility.

*Holistic approach and interdependence* are well defined (lines 896 – 900 in ISO 26000) as follows:

»An organization should look at the core subjects holistically, that is, it should consider all core subjects and issues, in their interdependence, rather than concentrating on a single issue. Organizations should be aware that efforts to address one issue may involve a trade-off with other issues. Particular improvements targeted at a specific issue should not affect other issues adversely or create adverse impacts on the life cycle of its products or services, on its stakeholders or on the value chain.«

Holistic approach and interdependence between process participants are *addressed indirectly in ISO 26000* by usage of terms such as: stakeholders; accountability; transparency; ethical behavior; respect for rule of law and other rules; honesty; human rights; dialogue; wider impact; no abuse; no discrimination; healthy environment; no exploitation. This means that interdependence is considered and leads to (requisite) holism attainable by their interaction, similar to informal systems/cybernetics thinking/





behavior. This is namely very close to the pioneers of systems theory and cybernetics: Bertalanffy (1968: VII) wrote explicitly that he had created his General Systems Theory 'against over-specialization'; Wiener practiced interdisciplinary creative cooperation; Mulej and other authors supported further development with several methodologies (François, 2004).

Thus, the law of requisite holism (RH) and ethics of interdependence (by Mulej and Kajzer, 1998; based on: Mulej, 1979) are reinforced on the global level.

The link between social responsibility and sustainability is hence clear: social responsibility supports sustainability and includes the care for environment in its 7 topics.

## SOCIAL RESPONSIBILITY, NEO-LIBERALISM AND INNOVATION

The human need to formulate documents of progressive enterprises, United Nations and European Union on SR a good decade ago and ISO 26000 in 2010 reflects the *blind alley of the socio-economic model of neo-liberalism*. Hence, SR could and should be perceived as a complex invention-innovation-diffusion process, which should include dialectical systems behavior (Ženko, 2011, a, b; Ženko, Mulej, 2012). Complex process can be managed only with interdisciplinary cooperation of many specialists (specialized scientific disciplines), who feel and practice ethics of interdependence because they are complementary with their mutual differences; this enables them to attain requisite holism (disagreement means looking at the same topic from different viewpoints!). The total holism that is addressed in ISO 26000, reaches beyond human capabilities; holism with limitation inside a single viewpoint and discipline is only very exceptionally sufficient (Mulej et al., 2013).

International Standard ISO 26000 is a great guidance to SR, actually to systemic behavior. Though, ISO 26000 is guidance, *not* an international *law*, even less a supra-national law, but the market requires it (Repše, 2013; www.horus.si). Including the DST theory and methods (Mulej, 1974; Mulej et al., 2013; etc.) helps the stakeholders to more easily accept, practice and demand SR globally. This can be attained on an informal basis, too, which we will suggest later. The point is not in SR as something self-sufficient, but in its role of the systemic/DST alternative to the neo-liberalistic blind alley.

It is also important that no certification for ISO 26000 is possible (ISO, 2010), but certification for management of ISO 26000 has become possible in 2011 (IQnet, 2011). This may fortify systemic behavior, albeit in a (too) slow and rather late invention-innovation-diffusion process (Mulej et al., 2013; Hrast et al, 2013).



## METHODOLOGICAL SUPPORT TO EFFORTS FOR SOCIAL RESPONSIBILITY

The crucial ideas of social responsibility need methodological support to become reality in company practice. This means that governance and management do not need the knowledge briefed above here, but also methodological knowledge. We do not have room for all ideas suggested by Štrukelj (2015). We shall keep to our own experiences. Both De Bono's »Six Thinking Hats« (entire 'New Moment', 28) and Mulej's USOMID (1982) methodologies experienced thousands of successful applications. To avoid 'fighting' rather than creating in sessions etc., it makes sense to use both methodologies in a synergetic combination. Here we will discuss our concept of this combination.

### SUMMARY OF THE ESSENCE OF USOMID

Acronym USOMID denotes »Creative Co-operation of Many for Innovativeness at Work«. It denotes a methodology and method that has been developed to make application of Mulej's Dialectical Systems Theory (DST) feasible with no word of theory. (Mulej et al, 2013). In DST one considers starting points, both objective and subjective parts of them before objectives definition. The objective ones cover conditions – (a) needs and (b) possibilities, e.g. typical of an innovative society. The subjective ones cover human attributes summarized as (1) knowledge on »What« that means contents; (2) knowledge on »How« i.e. methods, techniques; and (3) values and emotions (to respond to question „Why do/should we like / dislike to do ... ?“). All five reflect in components of USOMID, with which starting points become more concrete in line with the given conditions. They are interdependent. Thus, one attains requisite holism.

The general methodical knowledge is called in this case the *USOMID/SREDIM PROCEDURE*, which is used by co-workers, organized in *USOMID circles*. This can apply to educational work, as decades of experience have demonstrated.

### USOMID-SREDIM PROCEDURE AS THE GENERAL METHOD FOR CREATIVE WORK AND CO-OPERATION IN THE USOMID CIRCLE

Now we are focusing on contact points of USOMID in Six Thinking Hats (6TH) methodology. This is why, among attributes of USOMID, we find procedure the most interesting here. It might namely complete up the so-called Blue Hat, while the other five hats would complete up the work and co-operation by USOMID. (We will brief 6TH later.)

The acronym SREDIM denotes six steps of the procedure, while acronym USOMID denotes that it is not only process of *work*, but also of *co-operation* that does not exist in the original SREDIM procedure (See: Mogensen, 1980).

*In step S (select problem)* the unit's coworkers (or students in a team) first collect suggestions what are problems worth solving and opportunities worth developing. The created list offers every individual a chance to choose what problem / opportunity he or she wants to help solving / developing. Volunteers make circles and decide on their own problem / opportunity selection. (All 6 hats are usable now.)



*In step R (record data)* the circle collects data about their selected problem. Now they can support their work with programs from DST, which we do not summarize here. In this step no data receive the question ‘why’ or any form of doubt. This is the positivistic, uncritical phase. (It is similar to thinking under the white hat.). Criticism will have its turn in the next phase.

*In step E (evaluate collected data)* namely the question ‘why’ becomes central. Circle members have no solution, only unevaluated data. Data must be analyzed to bring participants later on more easily to a solution that will not be fictitious, but making sense. This phase will draft several possible solutions. (In it, all six hats may apply, but mostly the red, green, yellow, and black ones do, as phases.)

*In step D (determine and develop solution)* the circle will first assess which drafted solution is relatively most realistic and promising, how can several of them be combined into a new synergy, etc. Then the circle will try to develop the selected draft solution to a workable, usable, and potentially useful/beneficial one. (Again all six hats may apply, but mostly the red, green, yellow, and black ones do, as phases.)

*In step I (implement solution)* the circle tries to have their selected solution applied in reality (on a prototype level, at least). If people feel they are solution’s (co)-authors, one will probably not have to break their opposition. If one imposes the new solution, only people enjoying a big trust may succeed. Therefore this phase may have to be a project in its own right. (This phase is no longer covered by the Six Hats; all six hats may apply, but mostly the red, green, yellow, and black ones do, as phases, for the preparation of a real-world implementation.)

*In step M (maintain the introduced solution)* one considers that the introduced novelty does not necessarily survive on its own. It needs maintenance. At the same time, this phase shows, what is a remaining or new problem / opportunity worth solving / developing. This brings us into the next cycle of application of the USOMID procedure. (Again, the six hats no longer cover this phase, but for preparation of maintenance all six hats may apply, but mostly the red, green, yellow, and black ones do, as phases.)

*Concrete techniques* for steps SREDIM are chosen in real time according to the problem type.

The four steps, which control *running* each of the SREDIM phases, are our addition (Mulej, 1982; several books later on, including Mulej et al, 2013). We found them needed, because one otherwise has a good process of work with no creative co-operation, which is not enough. A brief comment:

1. *Individual brain writing* allows everyone to think at the same time with no waiting for the oral discussants to finish. Notes must have no signature and must be in capital letters or typed for contents to be easier to see, and the authors to be invisible.
2. *Circulation of notes* among circle members allows for synergy of notes. Everybody receives notes of all others, reads them and adds ideas surfacing in one’s head while reading (if any).
3. *Oral discussion* about the collected ideas follows, after everybody has used all notes once or twice. Discussion must synthesize the collected ideas toward a common opinion / finding. All six hats may apply, but mostly the red, green, yellow, and black ones do, as phases.
4. *Shared minutes/conclusions* result from synthesis of the attained conclusions. All six hats may apply, but mostly the red, green, yellow, and black ones do, as phases.

The focus of thinking is frame-worked by the current step of SREDIM, all the time.

Including all four steps of co-operation in the phase S makes USOMID different from the usual brainstorming in which somebody is in charge of imposing over the others what will be their topic. Imposing creates resistance, inhibiting devotion of co-workers



creativity to the topic. They can find sufficient excuses to make it fail. USOMID prevents this difficulty, especially in combination with 6TH.

USOMID is mostly devoted to studying and innovating processes of creative work rather than of routine. Details cannot be included here. Principles of proceeding from a rough toward a detailed insight, causes tree etc. are used for authors to meet the entire dialectical system of preconditions of requisite holism at work. We cannot expose details here (See: Mulej et al 2013). Neither have we room to include details about an even distribution of organizational jobs to all circle members. It evens burdens and allows everyone to control an organizational viewpoint of the shared process as well as to be creative as a circle member. There are 12 roles in the USOMID/SREDIM model, because the upper limit of circle-members number is twelve (the down limit being five). In the circle's meeting, there is another usual danger: some circle members may want to prevail and argue, which leads toward a one-way communication rather than to creative cooperation of all circle members. Cooperation receives support from the USOMID/SREDIM procedure and can receive additional support from the 6TH methodology.

## CHANCES FOR COMPLETING UP USOMID BY THE SIX THINKING HATS

As we have briefed in p. 4.2, the USOMID model of creative co-operation enables smooth work covering several professional views and organized procedure, thus leading toward the law of requisite holism. This enables a lot of creativity and a lot of innovation, not invention only. A problem that has remained unsolved over all 30+ years is (1) relative waste of time, (2) fight / arguing and bad feelings. The organizational jobs are supposed to solve this problem, but it does not always work without trouble. This is where the 6TH applies.

The 6TH enters the scene as the third dimension along with SREDIM and the four USOMID steps in every-one of them (Fig. 1). We hinted to it in p. 4.2. The 6TH namely enables all circle members to not argue, but to think *in the same direction, and to do so in terms of the exposed part of values rather than of knowledge*. Thus, our tendency toward the requisite holism is not blocked. The six hats are namely neither used by one person each nor all at the same time, but all circle members use the same hat, and later on another one, at the same time, as phases. According to De Bono, this replaces the old western habit that the discussion participants close themselves in their respective viewpoints (like e.g. solicitors or politicians or armies or angry children) and fight for the upper hand rather than for mutual completion and shared and beneficial new solution (De Bono, 2005a). In other words, the 6TH supports well the creative cooperation, but from different viewpoints than the above-summarized attributes of USOMID do: 6TH points more to the values-and-emotion part of the human personality than to the professional part. Both of them are interdependent anyway.

As briefed above, USOMID contains roles for organizational jobs along the shared thinking. With these roles and the USOMID/SREDIM procedure USOMID covers the blue hat, but not the others. The white one may be visible in step 2 (Record data). Procedure USOMID-SREDIM may be better in providing a logical phases order, about which users of 6TH must and may decide on their own.

In 6TH all circle members think in the frame of the same hat. De Bono calls this manner »parallel thinking« that provides for the same orientation, i.e. looking for ideas and proofs. It lets nobody oppose each other. Hats enter the scene as phases, ruled by accents of thinking, thus providing the power of focusing, time saving, removal of »ego«, neutrality and objectivity: one viewpoint in one moment (by phases – hats).

Obviously, all thinking hats are interdependent and used per phases. With some more detail they can be briefed as follows (details in: De Bono, 2005, or any other edition of the book):



**White hat:**

- Facts, data in the given framework (= law of requisite holism);
- No interpretation – self-discipline (!) – facts, no possibilities / persuasions, verified data;
- An overview (= »map«) is made step by step;
- Mutual listening, no prior definitions and/or decisions;
- Practical orientation, all data;
- Like a computer.

**Red hat:**

- Feelings, emotions, intuition;
- No explanation why something is (dis)-liked;
- Beneficial, although not always precise, correct;
- Intellectual feelings too (»interesting«);
- The opposite from the white hat, the irrational aspect of thinking;
- Emotions are unavoidable;
- Intuition that leads to a new view and thus to creativity;
- Opinion = assessment + interpretation + intuition = feeling;
- Emotion to be expressed without delay = background of thinking, values;
- Thinking leads to satisfaction (!), but:
  - Is it detrimental to others?
  - Short term versus long term?
- Emotions cannot be logical; therefore no justification takes place.

**Black hat:**

- Pessimism; most frequently – precaution, security, possible dangers, in order to enable survival;
- Critical standpoint, deviation from expectation in order to act against mistakes;
- No exaggeration in order to prevent over-pessimism and abuse of caution;
- Criticism, but all remains logical, although from negative viewpoints;



- No equilibrium; weak points are stressed now, the yellow hat will stress strong ones;
- Doubt about strength of proofs (»Might we better switch to the white hat?«) in order to lead to a requisitely holistic insight and assessment of the future situation;
- No limitation to criticism, a contribution is asked for!

#### **Yellow hat:**

- Optimism; advantages of the suggestion, positive thinking;
- How to implement the idea in practice?
- Sensitivity for the benefits of the idea;
- Care for making not only black views visible; correction of them, but not in the moment they are being expressed;
- Success; the unstoppable desire to implement the idea;
- Discipline! Conscious search for positive attributes, sometimes in vain, optimism may be exaggerated: »What action follows it now?«
  - Assessment of probability that it comes through;
  - Backing one's positive assessment with research;
- Constructive approach to strengthen efficiency of realization, but more important changes are not included now, they belong to the green hat.

#### **Green hat:**

- Energy, novelty;
- Creativity = the key part of thinking;
  - Deliberate;
  - Fantasy-based;
- Expose chances – to overcome obstacles that the black hat demonstrates;
- If energy is too abundant, one switches to the red hat to choose the framework of thinking;
- Use it, when experience no longer works well;
- Provocation included, research, risk as well;
- Lateral thinking (= step away with patterns in a new direction);
- Thinking about action, rather than assessment only;



- Logic of nonsense, provocation – »PO« = provocative operation, beyond »yes or now«;
- Alternatives after some results;
- Skill + talent + personality, all of them are needed and interdependent.

**Blue hat:**

- Thinking about thinking;
- Conductor, control, organizing, double-checking;
- Initial hat/step – to define situation, intention, timetable, sequence of hat application;
- Group had is in charge of this hat all the time, other may intervene;
- At the end – conclusions, summaries;
- Focusing – questions, problem, tasks, procedures, tools;
- Observation, discipline.

The system/network of all six hats produced many successes in different practical cases for 3 decades around the entire world (De Bono, 2005 in 2005a).



SREDIM Phases	1. Select problem / opportunity to work on in an USOMID circle	2. Record data about the selected topic (no 'Why')	3. Evaluate recorded data on the topic ('Why is central')	4. Determine and develop chosen solution/s to the topic	5. Implement chosen solution to the topic in reality	6. Maintain implemented solution for a requisitely long term
USOMID Steps Inside SREDIM Phases						
1. Individual brain-writing by all in the organisational unit / circle	All 6 hats	White hat	All 6 hats, red, black, yellow, green first of all	All 6 hats, red, black, yellow, green first of all	All 6 hats in preparation of implementation	All 6 hats in preparation of maintenance
2. Circulation of notes for additional brain-writing by all	All 6 hats	White hat	All 6 hats, red, black, yellow, green first of all	All 6 hats, red, black, yellow, green first of all	All 6 hats in preparation of implementation	All 6 hats in preparation of maintenance
3. Brain-storming for synergy of ideas / suggestions	All 6 hats	White hat	All 6 hats, red, black, yellow, green first of all	All 6 hats, red, black, yellow, green first of all	All 6 hats in preparation of implementation	All 6 hats in preparation of maintenance
4. Shared conclusions of the circle	All 6 hats	White hat	All 6 hats, red, black, yellow, green first of all	All 6 hats, red, black, yellow, green first of all	All 6 hats in preparation of implementation	All 6 hats in preparation of maintenance

Figure 1: Synergy of USOMID/SREDIM and 6TH methodologies in procedure of USOMID (Matjaz and Nastja Mulej, 2006)

This methodology disables one-sided arguing. It makes room for all opinions and data to be presented by phases covered by 'thinking hats' in a well arranged procedure in which nobody has either the upper hand or subordination. One-sided, narrow interests that have caused all troubles and wars might be overcome.

## SOME CONCLUSIONS

The entire humankind is in big trouble due to monopolies in the global economy, both business and government monopolies. Application of knowledge that might be able to solve the problem depends on values that prevail in all/any entities from families via corporations and other organizations, countries, international entities (such as European Union) to the entire world and humankind (and its United Nations Organization). The most influential of all of them are the corporations, hence their corporate governance and strategic management. Hence, they should urgently incorporate social responsibility and methods supporting its realization, which we have briefed here.





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# Demand And Supply Integration Management Concept For Assembling Company

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## *ABSTRACT*

Global economic and financial crisis in years 2008 – 2009 has changed supply chain relationships in automotive industry in two steps. After short-term immediate effects followed long-term trends affecting different processes and many departments in companies. Positive trends recognized in automotive industry are oriented at long-term co-operation with best partners, sourced globally. Principal activities between customers and suppliers are managed to diversity risks, develop suppliers, support financial stability of supply chain and apply global sourcing. We bridge the currently used practices sales and operation planning into supply demand integration company system. Paper is presenting actual analytical outputs about company demand and supply integration systems. On this base we formulate recommendations in the form of DSI (demand and supply integration) draft process model with five critical components. Demand forecasting is starting point for sales forecasting and we explain key aspects: characteristics of demand, forecasting technics and inputs for forecasting excellence. Forecasting excellence is standing at three pillars: statistical forecasts, qualitative judgments and consensus process.

*Keywords:* **supply chains, financial crisis, relationships management, automotive industry, demand forecasting, sales forecasting, independent demand, dependent demand, demand supply integration**

## INTRODUCTION

Automotive industry was one of the industrial sectors mostly affected by financial and economic crisis over the years 2008 – 2009. The effects of this crisis are not limited only to these two years. While economic depression culminated in year 2009, really long-term effects were showed in automotive supply chains later. It is not the target of this paper to analyse quantitative effects of crisis on individual subjects or entire supply chain. We focus with the part of this paper to analyse most significant changes in relationship management of participating parties. As all great economic depression, this global crisis has brought many serious, partially existential problems for all actors. On other side it was a chance for change of outdated relationships in complete supply chains.

Before crisis there were dominating *three types of relationship management approaches*. “Method of exit“, was preferred by big three North American car manufacturers. It is working with constant treat to suppliers to be replaced. “Method of voice“, used mainly by Japanese carmakers was on the contrary based on closed supplier pools with very long co-operation frame. And then there was a nascent method of European car producers, mainly German ones, which was at that time *a compromise between mentioned two ones*.

During crisis all activities of supply chain parties were directed to quarrantte survival of companies. While car makers focused their influence in political lobbying for their own benefit, lower Tier suppliers fought to avoid any delivery disruptions in supply chain. All the changes of relationship management in this time were purely reactive, as entire automotive sector was burdened with the mistakes of the past.

Only with the next recovery period started some long-term changes in relations between individual subjects within supply chain. Now after several years, we can define fields of these changes and prove their permanence. For this paper purpose we focused our attention to following areas:

- Sales – namely risk diversification in sales
- New trends in procurement affecting business relations within supply chains
- Financial stability of supply chain
- Logistics
- Technologies and innovations are re-shaping their roles

Developments in the automotive industry supply chains in recent years greatly influenced also *theoretical thinking on processes of integration in supply chains*. The current author’s intent is focused on procedural changes and innovative approaches in supply chains.

Many authors have, over the last twenty years, written about sales and operations planning. We could find these topics reading about sales management, operation management, supply chain and purchasing, also about marketing management etc. But in all the above mentioned examples we see always a dominance of a single activity, despite the efforts is lacking integrative approach. Later, we note something like rebranding of sales and operating planning, but this is not demand and supply integration. We could see several common implementation problems, but also some basic differences, which we describe in next three points (Moon, 2013).

First S&OP processes are often tactical in nature. They often focus on balancing demand with supply in the short run and turn into exercises in flexing the supply chain, either up or down, to respond to sudden and unexpected changes in demand.



Second, sales and operation planning process implementation is often initiated and managed by a company's supply chain organization. Because, the supply chain executives are "blamed" for failure to meet customer demand in a cost-effective way. Nothing can make sales and operation planning fail any faster than having sales and marketing be non-participants.

Third, the name with sales and operation planning carries with it a tactical aura. Many more functions beside sales and operations must be involved in order for effective business planning to take place.

*Demand and supply integration approach is not unknown term.* Companies used it approximately for 15 years, particularly manufacturers in the automotive and electronics industries, which operate on the principle of assembling.

Many companies, in their practice, introduced anticipation of sales and step by step they implemented interconnection between sales forecasting → sales planning → production planning → capacity planning → resource procurement (Lysons, Farrington, 2012).

Finally, the introduction is required to fill important methodological and terminological remarks. It concerns the names of sales forecasting and demand forecasting. Business talks about sales forecasting, but more recent articles indicate demand forecasting as a key starting point. For some authors it is the same or not important to explain differences. Sales forecasting can not exist without demand forecasting. The difference is that sales forecasting is part of the process of creating sales plans (especially for medium and short-term periods) and should take into account the capacity planning (Kita 2010, Oresky 2011).

## METHODOLOGY

This paper is presenting actual analytical outputs (particular outputs) and opinions, conclusions about company demand and supply integration system and on these outputs base we formulate recommendations in the form of DSI (demand and supply integration) draft model suitable for today and future. "The key inspiration" or source of knowledge is based on wide doctoral research at University of Economics in Bratislava, supervised by author of article. Doctoral research was based on secondary data research, but also on direct examination, expert questioning at several companies supplying the automotive industry.

In the second phase, the critical object of our research was DSI modelling. The principal research methodology was questions placed to sales, procurement, manufacturing operations executives in manufacturing companies and to other experts. We talked with two dozens of manufacturing and distribution companies (no service firms) within automotive, chemical industry, building materials production industry, furniture and food industry.

*The starting hypothesis is related to the aspect if and how firms are using effectively modern procedures and processes respond to changes in demand development within company processes integrating sales, production, purchasing and other basic company functions.*

We have obtained very interesting data related not only to the conditions in the national economy, but there are also sources of multinationals or their local facilities.

## RESULTS – CHARACTERISTICS OF MAJOR RELATIONS CHANGES AND TRENDS BETWEEN ACTORS IN THE SUPPLY CHAIN AND DSI COMPANY MODEL

The following sections summarize the output area dedicated to changes in relationships within the supply chains (automotive) and the downstream synthesize knowledge in the process of DSI modelling.

### SALES – NAMELY RISK DIVERSIFICATION IN SALES

As car makers are selling their products outside of analysed supply chains, we discuss here only *sales activities of Tier 1 – 3 suppliers inside their chains*. Here we are able clear recognize two basic trends after crisis:

- Pursuit of customer diversification
- Looking for new markets

### PURSUIT OF CUSTOMER DIVERSIFICATION

Automotive industry is historically characterized as one with highest level of interdependency between individual players. This has many reasons. Most important ones are mainly unique technological equipment, long-term contracts, confidentiality and origin of many big Tier 1 suppliers as spin – offs of international carmakers. As a fact till crisis in years 2008 – 2009 many suppliers were absolutely dependent on one dominant customer. In general, every company is as strong as their partners are. There were many suppliers with really weak ones. Tier 1 's in North America were bound in relationships with Big Three (GM, Ford, Chrysler). Each of these carmakers was fighting for own survival. Additionally Obama 's administration decided to support suppliers only through carmakers. In this situation there was only one solution for managers – diversify customers. Golden rule of automotive industry, for several years, is to have maximum 40 percent of sales with biggest customer. This limit is generally accepted by customers also now, as they understand implications as lesson based on crisis experiences. „If the carmaker has its own safeguards to prevent spillover of its proprietary know-how, it may welcome collaboration with suppliers of greater proliferation; the carmaker can indirectly benchmark other leading competitors through collaboration with such suppliers and enhance its capabilities. Through proliferation, suppliers not only diversify enterprise risks but also strengthen bargaining power vis-a-vis carmakers, which will further vitalize collaborative problem solving“ (Oh, Rhee, 2008).

### LOOKING FOR NEW MARKETS

This is the next way of risk diversification. Again as a lesson learned from 2008 – 2009 is clear, that some types of crisis hit some sectors much more than others. In situation, when bank loans are unavailable for the business clients suffers especially the sales of cars. This was the stimuli, why many automotive suppliers changed their strategy of 100 percent focus to automotive industry.





Instead of continue previous approach they elaborated business plans for offering their products and services to other sectors. Some of them, mainly lower Tier 2 – 3 suppliers, achieved very quick reasonable success with this strategy in field of consumer products. For Tier 1 is this a strategy like long distance run as they have to define global working business model without any experience regarding branding. Few global Tier 1 suppliers are active in aerospace or renewable energy industries. The share of these activities on their sales volumes is marginal. On customer side this activity is welcomed as it helps to improve financial stability of supplier chain during sectorial crisis.

## NEW TRENDS IN PROCUREMENT AFFECTING BUSINESS RELATIONS WITHIN SUPPLY CHAINS

The position of procurement changed fundamentally after crisis. It is accepted as strategic function by company's top management now. In the most of companies is purchasing manager reporting to general manager together with sales manager. Problem is remaining, that only the minority of purchasing managers has adopted conviction in entire supply chains competition instead of individual companies. First reason is superiority feeling toward suppliers implicit in hierarchical understanding of supply chain. Second reason is personal experience of overwhelming majority of these managers only with buyer's market (excess of supply compared to demand). Sure it is welcomed if buyer has personal experience with sales and this is valid vice-versa too. We observed following trends in relationship management by procurement:

- Supplier development
- Preference of integrated suppliers
- Utilization of internet portals
- Global sourcing
- Sourcing flexibility

*Supplier development.* This term is known in literature for a long time, also before crisis. Its content was mainly limited to ad hoc short – term actions to resolve existing quality issues with supplier. With process oriented managerial style, focus changed into pro-active, avoiding of issues. „Short-term problems can be addressed through collaboration in new car development and the ensuing mass-production process, whereas long-term problems can be solved through supplier development“ (Oh, Rhee, 2008). Supplier development is not only a more quantitative assessment. Today it means set of activities to ensure mutual compatibility between supplier and customer. It is a neverending process. N. Imanipour et al. (2012) defined long – term goals related to suppliers:

- Supplier Quality Improvement
- Supplier Production Process Improvement
- Increasing Competitive Power in Market
- Supplier On-time Delivery
- Cost Leadership in Market
- Technical Knowledge Transition to Suppliers



- Logistic Knowledge Transition to Suppliers
- IT Knowledge Transition and Development
- Electronic Relationship and Information Sharing Development with Suppliers

Effect of all these activities has to be money and time savings for both sides. For future there still remains one important question: How to unify supplier development process through entire supply chain?

*Preference of integrated suppliers.* In our context adjective integrated has nothing to do with product's scale, no matter if module, systems, groups or individual component is delivered. Integration is here related to supplier's production technologies. Example from practice: Tier 1 supplier is buying painted plastic parts. In the past, this usually involved three parties. Injection moulding producer has produced blank plastic part, this one sold to painter and painter sold painted plastic part to customer – Tier 1. Both sub-suppliers were sourced independently by Tier 1. If problems occurred, injection moulding producers blamed at painter and vice-versa. Due to unclear hierarchical arrangement and responsibility, this represents neither classic dyadic, nor network relationship. Described situation was recognized by some Tier 2 – 3 managers, which offered to their customers some complementary technologies beside core ones. The new model found positive response at customers as it solves many issues in different aspects (quality, logistic, R&D etc.)

*Utilisation of internet portals.* Already in last decade of 20th century, many companies started to use internet for commercial purposes. First attempts to manage relationships between supplier and customer were designed as third parties solutions open for all potential clients. The pioneer project in automotive industry was portal Covisint, established in the year 2000. After relative good start appeared very quickly limits of this project. Lower Tier suppliers perceived this tool increasingly, only as leverage to reduce prices. There were many similar efforts to establish such portals even before crisis no one of them was a real success. Therefore some OEMs and global Tier 1 began to establish their proprietary portals. Soon first of these portals, embraced additional functions supporting not only commercial activities with suppliers, but also supplier development. However, adoption of eBusiness in supply chains has been slower than expected, particularly in small to medium sized enterprises (SMEs). The downstream larger businesses were forging ahead with eBusiness in "eIsolation" and were not providing supply chain leadership. They created eLands with SMEs adrift of them. With internal implementing of integrated enterprise resource planning systems changed the ability and willingness of SMEs to use proprietary portals of their customers. After critical period of crisis, generally all 2 – 3 Tier suppliers started to work with it. Current design of these portals includes only customer and one level of suppliers. We still need to find solution involving whole supply chain. The greatest benefits of eBusiness occur when its application is fully integrated throughout the chain.

*Global sourcing.* Several years ago, before crisis global sourcing was perceived by OEMs as localization of Tier 1 suppliers, which followed their customers into new markets. These ones subsequently sourced local 2 – 3 suppliers for some less sophisticated components. Key motivation was not the selection of worldwide best suppliers, but only to satisfy local authorities. At this point, we identify one of the biggest crisis values, which forced weak OEMs really start global sourcing for the right purpose – to find worldwide best suppliers. Principal points for that way are followings:

- Global footprint of Tier 1 suppliers
- Global car platforms
- High transparency through information technologies
- Changing balance of power in worldwide economics



The only recourse that suppliers have to generate long-term value gains and profitable growth is global growth in volume, following the crisis – particularly in emerging automotive markets.

*Sourcing flexibility.* Sourcing flexibility is related to the company's ability to find next supplier for each specific component or raw material. Some academics (Narasimhan and Das, 2000) observe that for a company to be competitive via flexibility, the sourcing or supply practices are very important. The importance of 1st Tier suppliers' purchasing capability is on the rise for the following reasons (Choi and Krause, 2006; Doran, 2003): first, as the 1st Tier suppliers' new parts of development cycle is shortened in accordance with carmakers' shortened new car launching cycle and lowered part carry-over ratio, the need for early involvement of 2nd Tier suppliers in the 1st Tier suppliers' R&D process accordingly grown. Second, the number of 2nd Tier suppliers with whom a 1st Tier supplier works is increasing due to carmakers' accelerated modularization and 1st tier supplier-base reduction policies. We generalize, that *sourcing flexibility was driven before crisis by top management of global companies, during the crisis it was driven by supply base bankruptcies.* Today the main aim of this activity is to improve complex flexibility as competitive advantage of individual supply chain. Historically, because of "exit method" sourcing flexibility is native for North American companies. On opposite side of the scale, we still can find Japanese companies. We need to add, that almost all OEMs and Tier 1 companies are trying for many good reasons concurrently with global sourcing and sourcing flexibility to reduce number of their suppliers. These processes are not antagonistic as behind all of them has to be the target to cooperate only with best suppliers.

## FINANCIAL STABILITY OF SUPPLY CHAIN

Next important crisis impact is that profitability and financial health become very important part of relationship management in automotive industry. While during crisis all activities in this area had only re-active characteristics, thereafter actors shifted to more systematic, pro-active measures.

## FINANCIAL STABILITY OF SUPPLIERS

"The crisis in automotive industry 2008 – 2009 left deep traces at suppliers. In 2009 suppliers turnover decreased in worldwide average by approximately 25 percent, average profit (EBIT/turnover) decreased from 5,7 percent in 2007 to approx. minus 1,5 percent in 2009. As consequence of this, over 340 suppliers have declared insolvency yet" (Roland Berger Strategy Consultants, 2010). It was necessity to replace them when market began vitalization after crisis. Roland Berger Strategy Consultants (2010) added: "... despite this, historically bad situation came the consolidation only very dragging into operation. Thus is the number of M&A (mergers & acquisitions) – transactions in supplier segment dropping since 2007 – and contrary to the general expectation went the purchases through strategic investors in 2009 disproportionately back. In addition to a general uncertainty of potential buyers and their lenders, the vehicle manufacturers played on this occasion central role. From the perspective of manufacturers, consolidation is not strategically desirable in many segments". Interesting change occurred by financial situation of Tier 1 and Tier 2 – 3. Suppliers with >10 bn EUR revenues reached lowest profitability levels. Small and medium-sized suppliers significantly improved their profitability comparable to pre-crisis levels. Suppliers need to put an even stronger focus on product innovation. Only suppliers, who can differentiate themselves from competition via superior product functionality, will be able to sustainably achieve EBIT margins in the range of 6 percent and above. Most other suppliers will be further pushed into the commodity corner, where profit will be locked at a 3 – 4% level.

## PAYMENT TERMS

Despite many positive improvements in relations between customers and suppliers in automotive supply chain, there are still persisting many open issues. One of them is unbalanced financial flow in individual supply chain levels. While car makers receive payment from customers in advance, respectively by delivery, they request suppliers for constantly longer payment terms. Before crisis ranged average payment term by approx. 45 days, during crisis it increased up to 90 days and at present even 120 days is not an exception. Subsequently the same payment terms Tier 1 transfer to lower levels. While global players are able to adapt these conditions, for small and middle sized Tier 2 – 3 companies this means constant financial stress. Main problem here is not cash flow, as financial flows are repeated, but refinancing costs are too high.

## FINANCIAL AUDITS

Leading global companies have started this activity immediately with first supplier bankruptcies in the year 2008. At that point automotive companies did not have any experience with this activity and relied mainly on financial reports issued by rating agencies. It was insufficient for decisions faced by automotive supply chains. OEMs and global Tier 1 suppliers began create their own risk management teams. These activities invoked different reactions in supplier community. Suppliers recognized legitimacy of these audits, other tried to decline. Because of sensitiveness of company's financial data it is the privilege of supplier to decline, but with consequence of losing business. Today these audits content two parts:

1. Evaluation of supplier's financial results. These data are generally public.
2. More important is discussion about supplier's business plan for next 3 – 5 years. This has to be the core topic of financial audit. Experiences show, that in many companies this document is still understood to be only formality with missing consistency. In such case, auditor has to be very cautious about the future of company.

It is really recommended for top managers and owners of audited company to participate on this discussion. In some countries or cultures this discussion can be made really only with decision-makers. Once the result of audit is available, it is the internal policy of individual customer, who makes final decision about next co-operation with audited supplier. It needs to involve representative of different departments (risk management, purchasing, financial department etc.), to avoid any excuses.

## LOGISTICS

Again we must characterize situation before and during crisis. Probably most important request in logistics was supplier localization with primary aim to reduce logistic costs. After crisis, now and in near future the main task of logistics department will be how to implement world best suppliers in entire supply chain. Logistics is not only about packaging, warehousing and transport, it is about project design. With global car platforms there is a possibility to have global supplier for particular product instead to have many local suppliers with different level of processes and cultural background. Involvement of logistic department has to be the most important by decisions about where produce components, where groups, modules, systems and where to make final assembling (sources and facility location). With increasing globalization and standardized supplier development, purchasing will be able identify right partners for every scenario.



## TECHNOLOGIES AND INNOVATIONS ARE RE-SHAPING THEIR ROLES

As in our life, new technologies and innovations are playing increasingly important role in automotive industry. While in crisis time, best opportunities for producers were provided at low segments cars, after crisis years technologies and innovations implemented in car and its production become decisive. Balance between OEMs and Tier 1 suppliers completely changed. In the past all innovation was driven by OEMs. Management consultancy Oliver Wyman (formerly Mercer Management Consulting) identified that in 2015 the global automotive suppliers and engineering firms will invest approximately 65 bn Euros in R&D — far more than twice as much as the OEMs. Growing importance of Tier 1 suppliers, which take over leadership by development of individual modules and systems, failed to be translated into their equality with OEMs. From future's point of view the OEMs dominance will be apparently maintained due following reasons:

- Carmakers market consolidation, reduced OEMs number
- Mutual co-operation of carmakers
- Political support and lobbying
- Carmakers insourcing due to capacity redundancy
- Pressure on supplier number reduction

Despite this persistent OEMs dominance the shift in R&D and innovation activities towards lower Tier suppliers gives them great opportunity in marketing activities. As they do not own any product brand, they have to be able address/attack end customers with marketing of innovations and technologies developed by them. Once their campaign is successful, end users start ask this innovation or technology at car dealers and they do the same at OEMs. Currently all suppliers in automotive industry have only marginal experience with end users marketing and as consequence missing marketing infrastructure. Concurrently cannot be expected, that OEMs willingly reduce their influence on final consumer decision.

## DEMAND SUPPLY INTEGRATION COMPANY MODEL

During interviews with executives and experts, we have gained a wide range of descriptions of situations in companies when the coordination or integration of sales, which responds to market development and supplies to the enterprise, does not work. Signals that demand and supply are not effectively integrated are, for example, formulate in next questions:

- Does manufacturing complain that sale overstates demand forecasts, does not sale the product and then the supply chain gets blamed for too much inventory?
- Does the sales team complain that manufacturing cannot deliver on its production commitments and it is hurting sales?
- Does manufacturing complain that the sales team does not let them know when new product introduction should be scheduled and then they complain about missed customer commitments?
- Does the sales team initiate promotional events to achieve end-of-quarter goals, but fail to coordinate those promotional activities with the supply chain?
- Are raw material purchases out of alignment with either production needs or demand requirements?



- Does the business team adequately identify potential risks and opportunities well ahead of time? Are alternatives discussed and trade-offs analysed?

From our pre-screening, we see that 8 percent of companies have introduced their own DSI system (the level and effectiveness of these systems has not been studied). About 40 percent of companies develops and uses sales forecasting. The majority 47 percent of the firms combined usage of partial activities (sales plan and its linkage to the supply of major raw materials and components). Finally about 5 percent of companies do not feel the need to deal with sales or demand forecasting. Figure 1 shows the results of DSI implementation pre-screening.

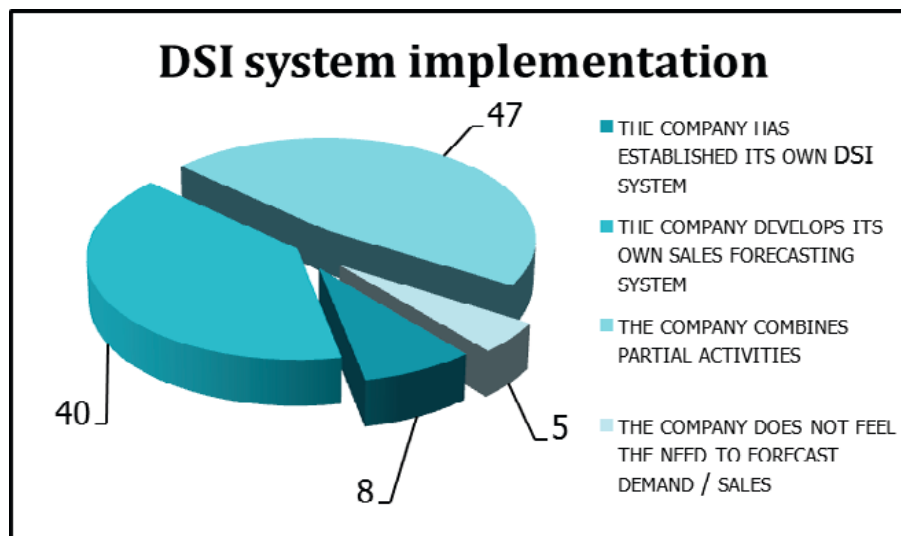


Figure 1: Results of DSI implementation pre-screening, based on own research

The ideal picture of demand supply integration could be described quite easy. First is demand forecast and capacity forecasting. The demand forecast is the company best “guess” about what customer demand will consist of in the future time periods. And the capacity forecast represents the best “guess” about what future supply capability will be. Several options exist: a) dampen demand, b) increase capacity, c) build inventory. And plus some other specific solutions.

Three categories of business plans result from the DSI process, as follow:

- Demand plan, which we could transfer into sales plan. Sales and marketing will affect sales f. e. if prices need to be adjusted to bring demand into balance with supply, then sale and marketing need to execute those price changes. In addition to price changes, there is a lot of choices in the usage of other marketing and sales tools such as CRM etc.
- Operational plans represent the decision from the DSI process that will affect the supply chain.
- Financial plan represent signals back into the financial planning processes of the firm based on anticipated revenue and cost figures that are agreed to in the DSI process.

*Demand supply integration (draft) process model* is based on critical components, which we present now. It should be stressed that this is one of the first versions of the DSI model for the enterprise (especially talking about producers).

- Portfolio and product review
- Demand review



3. Supply review
4. Reconciliation review
5. Executive review

*Portfolio and product review* – its purpose is to serve as input to the demand review for any changes to the product portfolio. These changes typically come from two sources: new product introduction and product or business unit rationalization.

*Demand review* – the ultimate objective of the demand review is an unconstrained, consensus forecast of future demand.

*Supply review* – the purpose is to arrive at a capacity forecast, defined as the company best guess of its ability to supply products or services in some future time period, given a set of assumptions that are both internal and external.

*Reconciliation review* – along with the executive DSI review, transforms S&OP into DSI for this is where the process is transformed from one that is designed to plan the supply chain into one that is designed to plan the business.

*Executive DSI Review* – is the final critical component of the DSI process and it constitutes the regularly scheduled gathering of the leadership team of the organization. The overall objective of the executive meeting is to: review business performance, resolve any out-standing issues that could not be resolved at the reconciliation meeting, ensure alignment of all key business functions.

## DETERMINATE AND INDETERMINATE DEMAND

Now is the time to open the question about the nature of demand, the basic dividing is determinate and indeterminate demand. Sometimes there are used names - dependent and independent.

Independent demand items are finished goods or other end items. Demand for independent items cannot be precisely forecast. Dependent demand items are typically subassemblies or components used during the production of a finished or end products. Demand is derived from the number of units to be produced. Nature of demand is a vital factor that affects the processes and techniques used in the forecasting process and the entire DSI process in company (Hvizdová, Matušovičová 2013).

## DEMAND FORECASTING STARTING POINT FOR SALES FORECASTING

Demand forecasting as a management process is a company best estimate of what demand will be in the future, given a set of assumptions. It should be an educated guess, but is nevertheless a guess. Many books and articles have been written on the subject of sales forecasting and are not starting with demand forecasting. We mentioned that sales forecasting can not exist without demand forecasting. The difference is that sales forecasting is part of the process of creating sales plans and should take into account the capacity planning.

Some key terms and aspects of forecasting process should be defined and well understood. We could talk about these ones:

- *Forecasting level* describes the level of granularity, or detail, in which a forecast is expressed, for example: core/profit products forecasts, product family forecasts with combination to key customers, to distribution partners, or sales territories etc.





- *Forecasting horizon* is the length of time out into the future in which demand is being forecasted. Frequently we talk about mid-term forecasts and short-term forecasts (also long-term forecasting is on program, but this one is related with strategic management level). Minimum length of the forecasting horizon should be no shorter than the production lead time. Maximum length depends on conditions of creating additional production capacity.
- *Forecasting interval* is the frequency at which the demand forecast is updated. This is very variable condition. Usually we use so called revolving system. For some consumer goods companies work with weekly forecasts, for assembling production we use weekly forecasts etc.
- *Forecasting form* is the type of physical measurement in which the demand forecast is expressed.

Management of the forecasting process in company is determined by variety of factors. Three overall areas must be examined prior to establishing a forecasting process – the nature of the customer base, the available data and the products or services being forecasted.

*The nature of the customer base* as are for example retail customers, business customers, distribution partners.

*The nature of the available data*; several categories of data are needed for effective forecasting: historical demand data, data about past and future macro environmental trends and competitor data etc.

*The nature of the product* is depending on product life-cycle stage. Specific situation is with new products. In sum, the nature of the optimal forecasting process will depend on the nature of the business.

In 21<sup>st</sup> century all business functions are supported by information systems that are designed to apply computer technology to make functions more effective. Three critical functions are performed by demand forecasting computer system (Moon, 2013):

1. Statistical engine working with sophisticated algorithms that identify patterns in historical demand and gives great value that comes from application of statistical modelling,
2. Data organizer working with data sources that must somehow should be organized, coordinated and made available to forecasting decision-makers. These are examples of outputs: baseline statistical forecasts, adjustment by marketing or product management, adjustment by sales, customer-provided forecasts, historical accuracy and bias metrics.
3. Data communicator – figure 2 presents overview of how demand forecasting systems should fit into overall information technology architecture. Professionally managed data warehouse is a critical component to the effectiveness of the demand forecasting process.





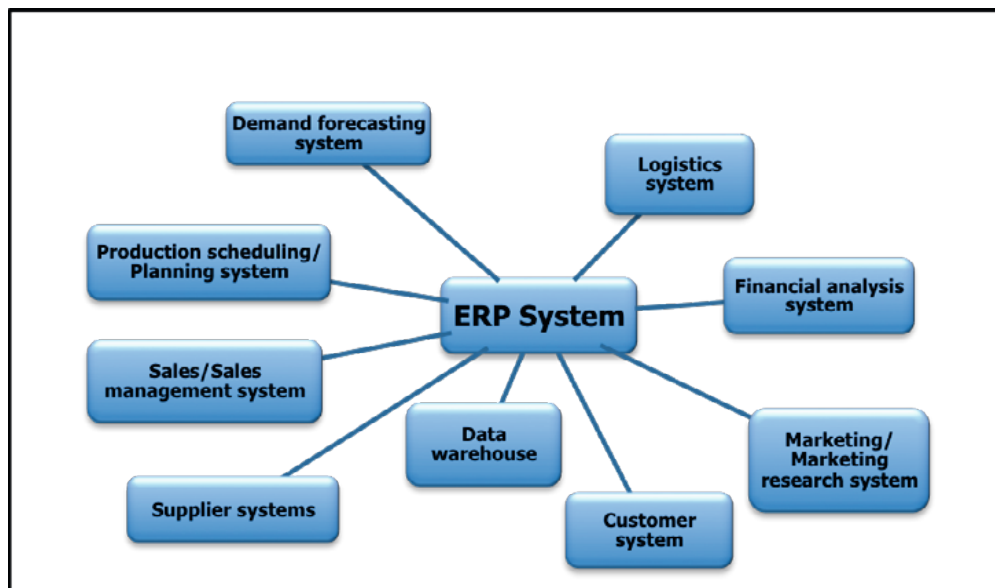


Figure 2: Forecasting system overview – information sources aspects, adapted according to Moon, 2013.

If we have good information databases and appropriate software package is a major issue usage of most suitable forecasting techniques. There is no need to talk in detail about a wide range of *qualitative and quantitative forecasting techniques*. It is a common mistake when outputs of qualitative or quantitative techniques or their combination are considered as demand forecasts (Gonzalez-Rivera, 2013). Forecasting excellence is standing at three pillars: *statistical forecasts, qualitative judgments and consensus process*.

Before we can talk about consensus demand forecast, we must take into account other “inputs”.

- We consider an important input into forecast to incorporate market intelligence. This concept we see from two points of views. First we call “bottom-up” forecasting and second one “top-down forecasts”. Micro information orientation is applied at individual customers, or individual products. And macro information orientation is applied to forecast industry demand for an entire category of products.
- Next specific input could be customer-generated forecasts (also as excellent source of market intelligence) prepared according different types of customers, including following: project-based customers, OEM customers, distribution and retail customers.
- As we see at figure 3 to get consensus demand forecast we add product management inputs and product portfolio changes.

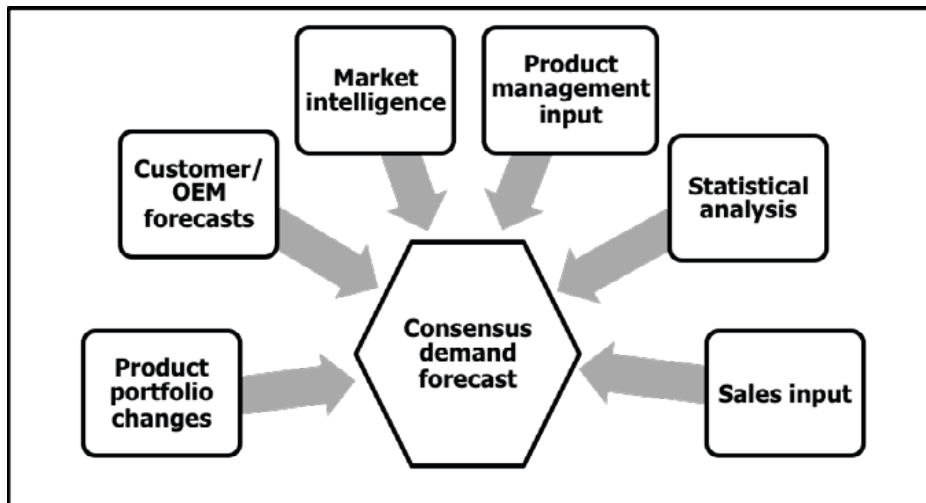


Figure 3: Inputs to the entire demand forecasting process, own processing.

Putting it all together, sources as baseline statistical + product/production management input + customer forecasts + sales inputs = we create final forecast.

## PERFORMANCE MEASUREMENT

Forecasting performance measurement is about two areas: *process metrics versus outcome metrics*. Talking about the performance metrics we must decide on indicators of effectiveness in DSI and outcome metrics shows the results of forecasting excellence. We incline to think that a good approach is to focus to return on shareholder value as ratio of profit to capital invested (working capital plus fixed capital).

## CONCLUSIONS

The relationships in supply chain were in the past, are now and will be a dynamic process. Internal dynamics of this organism is persistently accelerate and has impact on all departments within company. It is evident, that all players, no matter if big or small, can survive as a part of successful supply chain, or better within network. Any mistake in selecting right partners is critical, does not matter if we speak about customers or suppliers. It does not mean to rid of all non-ideal current partners. That definitely means to get out all those who are not-willing develop themselves. This is currently manageable in dyadic relationships scheme. Next step is to unify all these processes within complete supply chain/network.

Even a relatively short article and findings therein suggest that the idea of DSI model is very actual and interesting for the SME also bigger companies. Mentioned base structure of the model with key processes is good start-up point for further development and improvement according particular company conditions. We are starting with these components: a) portfolio and product review, b) demand review, c) supply review, d) reconciliation review, e) executive review.



In addition, to the selection of suitable forecasting techniques is critical to correctly define the characteristics of demand - independent or dependent demand. And then determine the main parameters such as level of forecasting, its horizon, interval and form. Today's time is required for the good management of forecasting developed system of corporate information resources. And final stage of forecasting must be consensus process.



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# Croatia's Human Capital in the Context of National Intellectual Capital

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## *ABSTRACT*

National intellectual capital is a source of competencies essential for economic growth. The measurement of national intellectual capital demands five categories of inputs. Human capital, as one of those categories, includes skills and capacities that reside in people. In this paper we measure the human capital of Croatia and compare it with four other European Union countries. We adopt and apply Lin and Edvinsson's approach to calculate the human capital index. Our results reveal very low levels of human capital in Croatia, the lowest among selected countries.

*Keywords:* national intellectual capital, human capital, human capital index, national wealth

## INTRODUCTION

In today's knowledge economy, the value of countries, regions, organisations and individuals is directly related to their knowledge and intellectual capital (Edvinsson & Bounfour, 2004). How will a particular nation use its natural, demographic, economic and geopolitical wealth and convert it into national prosperity is largely dependent on the use of its intellectual potential. However, the domain of intellectual capital has so far not been explored enough and it is often referred to as untouchable or invisible capital. National intellectual capital is a specific category because it depends on different components, whose creation has a long-term temporal component. National intellectual capital refers to the national knowledge and capabilities involved in society's value creation processes (Kozak, 2013). Intellectual capital represents the background of a nation's wealth creation process (Edvinsson & Malone, 1997). The concept of intellectual capital comes from Northern Europe. It was first developed in Sweden and has since expanded to the rest of North European countries, such as Denmark, Finland, and the United Kingdom; as well as to North America: the United States of America and Canada.

The measurement of national intellectual capital requires the definition of a complex set of variables that assist in the identification and managing of invisible wealth of the country (Lin & Edvinsson, 2011; Bontis, 2004). Different approaches were developed for measuring national intellectual capital. In this paper we follow Lin and Edvinsson's methodology (Lin & Edvinsson, 2011) since it is widely accepted. According to their methodology, national intellectual capital consists of five components: human capital, market capital, process capital, renewal capital and financial capital. Table 1 deconstructs the variables of each component.

NATIONAL INTELLECTUAL CAPITAL				
<i>HUMAN CAPITAL</i>	<i>MARKET CAPITAL</i>	<i>PROCESS CAPITAL</i>	<i>RENEWAL CAPITAL</i>	<i>FINANCIAL CAPITAL</i>
Skilled labour	Corporate tax encouragement	Business competition environment	Business R&D spending	GDP per capita
Employee training	Cross-border venture	Government efficiency	Basic research	
Literacy rate	Openness to foreign culture	Intellectual property rights protection	R&D spending/GDP	
Higher education enrolment	Attitudes toward globalization	Capital availability	R&D researchers	
Pupil-teacher ratio	Transparency	Computers in use per capita	Cooperation between universities and enterprises	
Internet subscribers	Country image	Convenience of establishing new firms	Scientific articles	
Public expenditure on education	Exports of goods	Mobile phone subscribers	Patents per capita	

*Table 1: National intellectual capital indicators (Source: Lin & Edvinsson, 2011)*

In most countries, human capital accounts for more than 60% of the nation's wealth, which includes natural resources, physical capital and human capital (World Bank, 1997). That is why it is the focus of this paper. In the next section, we give the theoretical background on human capital. In the 3<sup>rd</sup> section, we measure and compare human capital indices for Croatia, Slovenia, Austria, Germany and Denmark. In section 4 we discuss the results and compare them with the IMD talent report rankings of these countries.



## BACKGROUND ON HUMAN CAPITAL

In the 1960s, Schultz (Schultz, 1961) and Becker (Becker, 1964) introduced the concept of human capital into modern economic analysis. Human capital is “the most important and most original development in the economics of education” in the second part of the 20<sup>th</sup> century (Coleman, 1990).

Economists claim that human capital is an important source of economic growth and innovation and it is also recognized as a crucial factor in reducing poverty and inequality (Stroombergen et al., 2002; Keeley, 2007). Previous research on human capital, performed in various countries, such as Canada (Gu & Ambrose, 2008), New Zealand (Li, Gibson & Oxley, 2005), Norway (Greaker & Liu, 2008), Sweden (Alroth, 1997), the United States (Jorgenson & Fraumeni 1992; Christian, 2009) and China (Fleisher & Chen, 1997; Démurger, 2001; Fleisher, Li & Zhao, 2009), established human capital as a leading source of economic growth.

Most of human capital definitions claim it is an individual level construct (Lepak & Snell, 1999; Pennings et al., 1998; Zucker et al., 2001; Walker, 2002; Davenport, 1999; Bontis, 2004). These authors view human capital as comprising the knowledge, skills, intellect and talent of individuals. Bontis defined it as a set of competencies of individuals for realizing national goals (Bontis, 2004). Human capital consists of the knowledge about facts, laws and principles, in addition to the knowledge relating to teamwork, communication, and other specialised skills (OECD, 2000). Some authors (Bontis, Dragonetti, Jacobsen & Roos, 1999; Grasenick & Low, 2004) question the practical aspect of the human capital theory. The economic theory of human capital, presented by different authors (Schultz, 1961; Becker, 1975; Mincer, 1958), does not explain the measurement practice in today's organisations and nations (Uziene, 2010; Koning, 1994; Asplund, 1994; Blaug, 1976; Chapman, 1993) but provides the basis for the most widely used measurements of human capital. There have been various attempts to address the substance of human capital (OECD, 1999; Johnston, 1998). Bontis, Dragonetti, Jacobsen and Roos (1999) suggest a “range of tools available in the metrics of managing intangible resources, each based on the recognition that the value-creating capacities of nations are based on the knowledge and capabilities of their people”.

Karl-Erik Sveiby was the first to recognise the need to measure human capital (Sveiby, 1997). According to Lin and Edvinsson, there are seven indicators of human capital: skilled labour, employee training, literacy rate, HE enrolment, pupil-teacher ratio, internet subscribers and public expenditure on education (Lin & Edvinsson, 2011). By applying these seven indicators, in the next section, we measure Croatia's human capital. Then, in order to make a comparison, we measure the human capital of four other European Union countries, which are often seen as role-models for Croatia.

## MEASURING CROATIA'S HUMAN CAPITAL

Hereinafter, we measure the human capital indices of Austria, Croatia, Denmark, Slovenia and Germany. The countries have been selected as follows. This is the first attempt to measure the human capital of Croatia. With an aim of putting it in the global perspective, we want to compare the level of human capital in Croatia with other European Union countries. Thus, we measured the level of human capital in surrounding countries: Slovenia, Austria and Germany. Denmark was also selected because it had the highest national intellectual capital score on the ranking list made by Lin and Edvinsson (2011).



There are two different types of data in the research: the data with an absolute value such as the literacy rate, HE enrolment, pupil-teacher ratio, internet subscribers, and public expenditure on education; and the data with a qualitative rating, based on a scale of 1-10, such as skilled labour and employee training. According to Lin and Edvinsson, although subjective, the qualitative rating of the degree of certain variable is unavoidable because “evaluating intangible assets cannot be fully represented by merely adding up absolute numbers” (Lin & Edvinsson, 2011). With the purpose of meaningful interpretation of quantitative scores and qualitative rankings, each quantitative indicator variable was multiplied by 10 in order to transform the number into a score of 1-10. This transformation was performed for all numerical indicators of human capital. Finally, to obtain the human capital index, we have calculated the average of all indicators. Thus, human capital indices can take a value in the range of 0 to 10.

The human capital index traces the size of public investment in education by incorporating the indicator of public expenditure. It also looks at the quality of education through the indicators related to pupil-teacher ratios. The development of talent is covered by the variables related to the implementation of apprenticeship and the priority of employee training for companies.

In addition, we explain each of these indicators in detail. The data for most of these indicators was collected from the IMD World database (IMD World Competitiveness Center, 2015) and Croatian Bureau of Statistics (Croatian Bureau of Statistics, 2015).

The indicator *skilled labour* determines if skilled labour is readily available. In terms of skilled labour (readily available), Ireland (8.09) is at the top of the table, closely followed by Finland (7.76), Denmark (7.57), the Netherlands (7.48) and the Philippines (7.37) (IMD World Competitiveness Center, 2015). Of the countries in our research, Slovenia has the highest score (5.76) after Denmark, and ranks 30<sup>th</sup>. Germany (5.45) reaches a distant 37<sup>th</sup> spot, whereas Austria (5.15) and Croatia (5.14) rank 43<sup>rd</sup> and 44<sup>th</sup>. At the end of the list is Bulgaria (3.09) and South Africa (2.96).

*Employee training* indicates if employee training is a high priority in companies. Switzerland leads the way in employee training. Germany (7.79) and Japan (7.78) reach 2<sup>nd</sup> and 3<sup>rd</sup> place, respectively; followed by Malaysia (7.71), Austria (7.53) and Denmark (7.51). Regarding the same indicator, Slovenia ranks 50<sup>th</sup> with 4.83, while Croatia ranks 46<sup>th</sup> with 4.21. The list ends with Greece (3.89), Spain (3.86) and Bulgaria (3.64) (IMD World Competitiveness Center, 2015).

Both qualitative indicators for all countries are presented in Figure 1.

Figure 1: Values of skilled labour and employee training indicators



*Literacy rate* is “the percentage of the population age 15 and above who can, with understanding, read and write a short, simple statement on their everyday life” (The World Bank, 2015). The five countries in our research have very high and very similar literacy rates: Slovenia 0.997, Croatia 0.992, Germany and Denmark 0.990, and Austria 0.980.

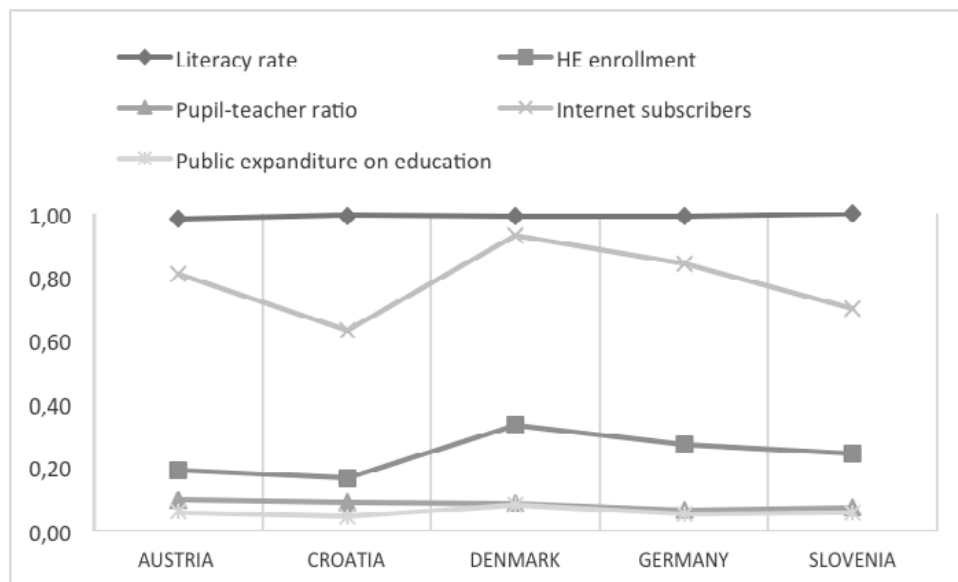
*Pupil-teacher ratio* identifies a ratio of students to teaching staff in primary and secondary schools. Human capital includes looking at the quality of education through the indicators related to pupil-teacher ratios. In this research, we actually use the teacher-pupil ratio itself as an indicator, and it identifies the number of teachers per one pupil. The pupil-teacher ratio list is headed by Sweden (primary school) and Portugal (secondary school). Of the countries in our research, Austria has the best ratio (the lowest number of pupils per teacher), followed by Croatia and Denmark.

The highest number of *internet subscribers* (the number of fixed broadband internet users per 100) belongs to Denmark (0.93), followed by Germany (0.84) and Austria (0.81). At the end of the list are Slovenia (0.7) and Croatia (0.63).

*Public expenditure on education* is the total public education expenditure (current and capital) expressed as a percentage of total government expenditure for all sectors in a given financial year (The World Bank, 2015). Higher education is of vital importance for a country, as it is a powerful tool for building knowledge-based societies of the 21<sup>st</sup> century. Denmark has the highest percentage of government expenditure for education (8.13%), followed by Austria (5.95%) and Slovenia (5.7%). Croatia invests 4.3% of its total expenditure in education.

The explained quantitative indicators are presented in Figure 2.

Figure 2: Values of five human capital indicators



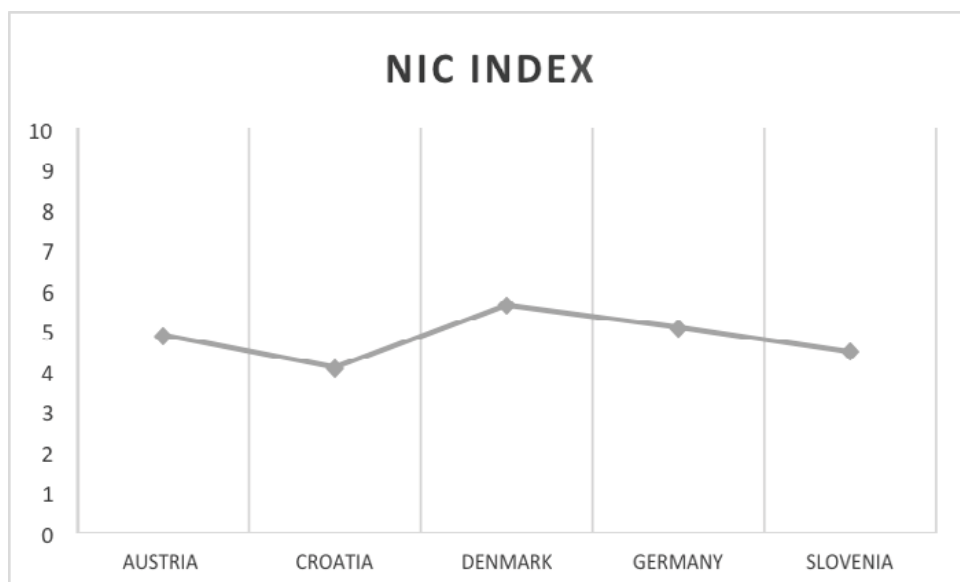
Based on the seven input indicators, we calculated the human capital index. The results are presented in Table 2 and Figure 2.

*Table 2:* **Human capital index**

Country	HC index
<b>Austria</b>	4,8632
<b>Croatia</b>	4,0756
<b>Denmark</b>	5,6073
<b>Germany</b>	5,0586
<b>Slovenia</b>	4,4672

Denmark has the highest human capital index (5.6073), followed by Germany (5.0586) and Austria (4.8632). Slovenia has a higher human capital index (4.4672) than Croatia (4.0756). Our results are graphically presented in Figure 3.

*Figure 3:* **Graphical representation of human capital index**



In the following two sections we discuss the obtained results and conclude the paper.

## DISCUSSION

Hereinafter, we will compare the rankings of the countries, based on the human capital indices calculated here and their IMD World Talent rankings. The IMD World Talent Report is a talent ranking calculated by the IMD World Competitiveness Center for all countries that are part of the IMD World Competitiveness Yearbook (60 countries). The objective of the IMD World Talent Ranking is to “assess the ability of countries to develop, attract and retain talent to sustain the talent pool available for



enterprises operating in those economies“ (IMD World Competitiveness Center, 2015). The ranking is structured according to three factors: 1) investment and development, 2) appeal, and 3) readiness. The investment and development factor takes into account the investment in and development of domestic talent. This factor focuses on the size of public investment in education and includes: an indicator of public expenditure and the quality of education, measured by the indicators related to pupil-teacher ratios. The development aspect relates to variables focusing on the implementation of apprenticeship, the priority of employee training for companies, and the development of female labour force (IMD World Competitiveness Center).

The appeal factor accounts for the ability of a country to “tap into the overseas talent pool” (IMD World Competitiveness Center). This factor consists of the following variables: the cost of living, the quality of life, the inability of a country to attract highly-skilled foreign labour, the indications of how enterprises prioritize the attraction and retention of talent, and the level of worker motivation.

The readiness factor examines the context of the talent pool. This factor focuses on: the experience and competencies of managers, the ability of the educational system to meet the talent needs of enterprises, and „examines the way in which the educational system fulfils the talent demands of the economy, the ability of higher education to meet that demand and the language skills available“ (IMD World Competitiveness Center).

Table 3 allows comparison between the human capital indices and IMD world talent rankings of the five selected countries. Our analysis shows that the variations in talent rankings among selected countries are relatively high, ranging from the 3<sup>rd</sup> placed Denmark to the 57<sup>th</sup> placed Croatia.

Table 3: Comparison of *IMD world talent ranking* and *human capital index ranking*

Country	IMD world talent ranking	Human capital index ranking
Austria	9. (2.)	3.
Croatia	57. (5.)	5.
Denmark	3. (1.)	1.
Germany	11. (3.)	2.
Slovenia	48. (4.)	4.

## CONCLUSION

Croatian media are full of paradoxical stories regarding Croatian labour market. On one hand, Croatia has one of the highest unemployment rates in the EU, amounting to 20.3%, as well as the often mentioned *brain drain*. On the other hand, some of the well-paid job positions remain open for a very long time. It is evident that Croatian labour market suffers both from the cyclical and the structural unemployment. Although Croatia is a country rich in natural resources, without the human capital those resources will not be turned into economic prosperity.

The purpose of this article was to scientifically determine Croatia’s position regarding its human capital in comparison with the more developed EU members which are often mentioned as its role-models. The research shows that the availability of skilled labour in Croatia is a weak point of Croatia’s human capital and that it should be improved. The often complaint of Croatian companies is that the higher education does not develop in students the skills and competencies needed in the market. Although

these companies recognize the lack of skills as a problem and assign the responsibility to the education system, they do not invest much in employee training themselves. The importance of employee training for labour productivity has not yet been recognized in Croatian companies, which are mostly short-term oriented.

The literacy rate is high in Croatia, as well as in other developed countries. However, there is some room for improvement in the aspect of higher education enrolment. What is even more important, the structure of the higher education should be changed in accordance with the STEM studies.

Regarding the pupil-teacher ratio, Croatia has an advantage. However, this is the consequence of the negative population growth combined with the rigid labour regulations in the public sector.

The number of Internet subscribers in Croatia could be enhanced. This is especially important in the light of the fact that in 2013 one-third of Croatian schools reported having inadequate Internet access (OECD, 2014).

Of the observed countries, Croatia invests the smallest share of its expenditures into education. With the current economic situation and the great number of fixed expenditures for pensions and social security benefits, there is no room for improvements in the government budget.

Some may argue that Croatia is trapped in a vicious circle of insufficient human capital to turn its natural resources into economic wealth and, at the same time, no economic wealth to invest in strengthening its human capital. So, what can be done? We argue that certain steps can be made. First, the government should strengthen incentives for the companies investing in employee training so they could overcome their fear of the *brain drain* of trained employees. Another problem is that the competent skilled people passively expect to find a job in the downturn economy instead of starting their own entrepreneurial ventures. Therefore, the government should support the development of entrepreneurial culture. Thirdly, the cooperation between scientists, educators and businesses should be developed, mainly in two areas. The business sector should inform educators about the skills and competencies they would like to see in their potential employees, as well as present their problems to the scientists who could potentially solve them. The government could play the key role in realizing this cooperation by building an entrepreneurial culture in which such presentation of business problems and business ideas to scientists (who might facilitate finding solutions or idea realizations) would become a standard. This networking would not substantially increase the current expenditures for education, but would increase the productivity of the human capital at hand.



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# When is Product Placement Effective from an Advertisers' Perspective? – Possible Methodologies for Measurement

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## WHEN IS PRODUCT PLACEMENT EFFECTIVE FROM AN ADVERTISERS' PERSPECTIVE? – POSSIBLE METHODOLOGIES FOR MEASUREMENT

What makes a good product placement? The answer appears to be simple: if it achieves its goals, it is good. But what goals exactly? And a more difficult question: how do you measure their results? It is important for advertisers to see some ROI (return on investment) indicator for each of the tools they use, that is, to get information in order to assess the performance of their investment numerically (Csordás–Gáti, 2013). At the same time it is true that "it is very hard to assess the efficiency or effectiveness of a specific advertisement, especially in terms of its expenses" (Totth, 2013, p.93.).

It is even more difficult to measure product placement, when that the product does not appear in a commercial break, but a movie or TV show. Of course this does not mean that it is impossible to measure the result of product placement, or that there are no efforts to measure it. However, the main reason of the problem is that in product placement you have to consider much more factors than in the case of a traditional 30-second advertising spot.

Nevertheless, although the history of product placement goes back further, there is less experience regarding its measurement. Therefore there is a multitude of approaches and methodologies, but none of them is generally accepted.

Approaches can be divided into different groups:

- One of them focuses on how a specific placement can be interpreted as a media appearance. In this case they aim to develop a methodology that is similar to traditional audience and media research indicators.
- At the same time we must not forget that there is also a broader approach that analyses a more complete spectrum, that is, marketing and communications impact and effectiveness.

Let us discuss the latter first.

## APPROACHES MEASURING BROADER MARKETING AND COMMUNICATIONS IMPACT AND EFFECTIVENESS

Just like in the case of other marketing communications tools, the basic aims of product placement can be:

- increasing the sales volume,
- raising awareness and brand recall,
- image development.



However, there can be several other relevant aims, too:

- expansion of the target audience,
- development of positioning,
- internal marketing, etc.

Let us see examples of these, especially ones that support product placement, and confirm its legitimacy, proving that it is worth for advertisers to use them.

## INCREASING THE SALES VOLUME

A classic example of this is the movie *E.T. – the Extra-Terrestrial* (1982), which is often considered the rebirth of product placement. The protagonist, a young boy, lures the extraterrestrial creature to himself using some Reese's Pieces chocolate. As a result of the product placement (and the advertising campaign promoting it), the sales volume of Reese's Pieces increased by 65%. The marketing manager at M&M's, a competitor, previously contacted by Spielberg offering cooperation was probably not promoted: when the director-producer asked how much money M&M's would spend on the placement, the marketing guy asked how much Spielberg would pay for the opportunity to include the chocolate brand in the movie (Blog.moviefone.com, 2010).

But let us see some numbers again. Quite exact figures for several other movies are available, e.g. we could see Tom Cruise wearing Ray-Ban Wayfarer glasses in *Risky Business* (1983), and demand for the product increased by 50%.

In one of the scenes of *The Firm* (1993), another Tom Cruise movie, the main character visits his lawyer colleague at the Cayman Islands. The lawyer (Gene Hackman) immediately suggests that he should get a bottle of Red Stripe from the fridge right then. The brand was mentioned in the original novel by John Grisham, but for some reason it was omitted from the screenplay. Then the manufacturer offered beer worth USD 5000 for the producers, and the brand returned for the movie (Robinson, 2001). Their persistence paid off: just one month after the premiere the sales volume of the brand increased by 50% in the USA, and its owners soon sold the company to Guinness Brewing Worldwide for USD 62 million (Businessweek.com, 1998; Andersen–Gray, 2008).

The James Bond movie *Golden Eye* (1995) brought about a 40% increase in Omega watch sales (Stewart-Allen, 1999). The same movie resulted in nine thousand orders for BMW Z3 cars within a month (Kuti, 2012).

The placement in *Men in Black* was a great success for Ray-Ban sunglasses: the sales of its model Predator 2 were doubled, and reached USD 5 million (Escape-velocity-blog.com, 2011).

The first part of *Transformers* released in 2007 resulted in 60 thousand Chevrolet Camaro sales within a year (Kuti, 2012).

Orders of Dodge Charger increased by 227 per cent in 2011 as the model played a leading role in the current movie of the series *The Fast and the Furious* (Brandchannel.com, 2012).

In the case of a French movie titled *Le bonheur est dans le Gers* (1996) the number of tourists arriving in the region presented in the movie increased by 30% (Lehu, 2009).

When the ice cream brand Ciao Bella appeared in Donald Trump's *The Apprentice*, it became the third most popular search term on the Yahoo! search engine right away, and by the next day it was out of stock everywhere (Russel, 2007).



Product placement in movies produced in the "Indian Hollywood" (named "Bollywood" after Bombay) can also generate great business. For example, the placement of Coca-Cola in *Kaante* (2002) caused a 20% market growth (Mfor.hu, 2004b).

*Toy Story* (1995), a computer-animated children's movie, facilitated the sales of several toys: it caused 4000% (!) growth in demand for Etch-A-Sketch, 800% increase for Mr Potato, and the manufacturing of Slinky, a toy already withdrawn from the market, was launched again (Lehu, 2009).

Similarly, as a result of consumer demand, the Wilson brand had to bring a new volleyball to the market following the success of *Cast Away* – the balls featured the funny bloody face from the movie (Maynard–Scala, 2006).

We can also find examples in TV series: when Tony Soprano of *Sopranos* tells his psychoanalyst how much the book *The Art of War* by Sun Tzu affected him, it reached the number 6 spot on USA Today's bestseller list, and they had to print 25 000 more copies of the 2400-year-old work (Lehu, 2009).

There are TV programmes and reality shows also worth mentioning. An episode of Donald Trump's *The Apprentice* in 2005 made Staples' complex office storage system an instant success, selling 100 of them in 15 minutes, then 10 000 pieces within a few days (Lehu, 2009).

Last, but not least: although we do not have exact numbers, the appearance of Popeye's character on 17 January 1929 was a life-changing moment: he has made a lot of children eat spinach in the past 80 years

## RAISING AWARENESS AND BRAND RECALL

Product placement in Hollywood movies plays a very important role in Apple's marketing communications. As these movies reach a lot of viewers, these people are in constant contact with the Apple brand.

Of course exact measurement in such cases would mean that we measure brand awareness before and after the release of each movie. However, this would be a difficult challenge: on one hand it is expensive, but on the other hand the increase of brand awareness also depends on other communications activities of the brand, and the brand may also appear in several movies simultaneously, and so on.

Nevertheless, we can derive implications from a number of aspects: the viewership of the movie, the income generated as compared to the costs of production, and the degree of financing by the brand. Two examples: in the case of *My Big Fat Greek Wedding*, the Windex window cleaner was displayed, and the Greek father said it was not only suitable for car cleaning, but also for healing wounds. The total budget of the independent movie was USD 5 million, and Windex provided only a fraction of it, but the movie generated an income of USD 369 million, also gaining considerable popularity for the brand.

However, the total income of *Mac and Me* was not more than USD 6 million, which probably did not have a great influence on the awareness of McDonald's. To be more exact, in the latter case, the aim was not the increase of awareness, but the recall of the McDonald's brand – but the movie probably did not achieve that aim, either; not to mention image development (the movie was so bad that it was more of an image destruction), but this will be discussed in the next section.



## IMAGE DEVELOPMENT

Similarly to awareness, the image of a specific brand can also be developed by product placement. The James Bond series is an excellent example: before the making of each episode, crowds of advertisers would be willing to pay a lot of money to get their brand in the movie.

Besides the three main aims mentioned above, other related aims can also be achieved through product placement.

## EXPANSION OF THE TARGET AUDIENCE

Since most moviegoers are young people, cinemas are excellent means for brand owners to promote their brands among them. In the case of the French movie *Taxi* the aim of Peugeot was to make 406 – a model that used to be popular among middle-aged customers – attractive to younger audiences, too. Cadillac's placement in hip-hop music videos decreased the average age of customers by 12 years (Eldridge, 2001).

## POSITIONING

Films are also suitable for highlighting the differences between a specific product and its competitors by incorporating them in the dramaturgy, that is, showing what the USP (unique selling proposition) of the advertised product is. The *Herbie* series was an excellent example where the values of Volkswagen Beetle appeared embedded in a comedy.

## INTERNAL MARKETING

Although the opinion of staff working for the company or brand is extremely important in the case of commercials, including the degree of their identification with the brand and the development of their self-esteem, this may be even more valid for movies. *The Terminal* by Tom Hanks, for example, raised the pride of United Airlines employees.

Internal marketing usually also includes exclusive premiere screenings for the sponsors of the movies, where employees may even make photos together with movie stars.

We could go into even more details of marketing and communications aims in a broader sense with all the related impact and effectiveness analyses, but let us examine media indicator based approaches instead.



## APPROACHES WITH A FOCUS ON MEDIA INFLUENCE AND EFFECTIVENESS

Media research has identified a number of quantifiable indicators for advertisements, and, especially, TV commercials.

In the case of so-called audience research, professionals examine the following aspects – explained as simply as possible (Fazekas–Harsányi, 2011; Incze–Pénzes, 2006):

- Rating: What percentage of the population saw one specific broadcast of an advertisement (this is relevant for a given target audience and their analysis).
- Reach: While the previous number is valid just for one specific broadcast, a commercial is most probably aired several times during a campaign. The reach of an advertisement shows what percentage of the target audience saw the commercial at least once.
- OTS, that is, Opportunity To See: This indicator does not show how many people saw or met an advertisement, but the number of occasions when target audience members saw it during a campaign. Therefore it is also called frequency.
- GRP, that is, Gross Rating Point, gross rating: To put it simple, it is the total of all rating points. This way we get a kind of a percentage indicator in the end, but this percentage can exceed 100. (Therefore most of the time it is not referred to as a percentage, but a concrete number.) It can also be calculated by multiplying reach by frequency.
- CPT, that is, Cost Per Thousand: This is also a very popular indicator which is important from the perspective of cost efficiency, showing the cost of reaching a thousand persons.

As advertisers have already got used to these indicators, they usually wish to see these in the case of product placement, too. Therefore related measurements are much alike, and media measurement and research companies performing these are mostly the same.

As early as 2003, a system that records product placements in each programme of the six biggest channels and creates a database was developed in the USA by Nielsen, a media research company measuring TV ratings and providing essential information for advertisers (Adweek.com, 2003). Subscribers of the service may browse categories or advertising brands. The selected product placement can be viewed in a short video, and Nielsen also correlates data with the number of viewers having watched the programme.

But what data can be gained and calculated, either with this system or others?

### THE NUMBER OF BRAND PLACEMENTS IN A MOVIE OR TV SHOW

The simplest solution is to count the placements of the brand in a specific movie or show. Although it does not take into account many factors (for example, the length of each placement, fullness vs. partiality, active vs. passive), its simplicity makes it popular.

The method is often used in the case of American shows, too. According to a survey analysing the first quarter of the year 2008, the most brands appeared in *The Biggest Loser*, and Subway's healthy sandwich appeared especially often.



*Table 1:* Product placement in American TV shows, Quarter 1, 2008

Name of show	Channel	Number of brand placements
The Biggest Loser	NBC	3977
American Idol	Fox	3291
The Apprentice	NBC	1646
Deal or No Deal	NBC	1603
Extreme Makeover Home Edition	ABC	1011
Big Brother 9	CBS	1011
CW Now	CW	929
Pussycat Dolls Present	CW	805
America's Next Top Model	CW	574
One Tree Hill	CW	557

Source: Nielsen Media Research (2008)

TV channels often present this information to advertisers by collecting all scenes featuring the brand, and delivering the "proof" electronically.

## DURATION OF BRAND PLACEMENTS

This somewhat more sophisticated method does not only measure the number of placements in a movie, but their length, too. Having a placement of 5 times 1 second is quite different from even one placement of thirty seconds in one piece. The length of brand placements can also be interpreted as proportions: e.g. as compared to the full length of the film or programme, or as compared to other product placements, etc.

## METHODS OF BRAND PLACEMENT: FULL OR PARTIAL, ACTIVE OR PASSIVE

This method also used by Kantar Media in Hungary does not only examine the length of brand placements, but also the completeness or partialness of brand placement (that is, a complete or partial display of the product or its logo). The other dimension is active vs. passive brand placement (active: characters are using the product; passive: it is more of a support tool). The results are then displayed in a matrix (Mihálszki, 2011).

Another similar approach by Joyce Julius and Associates examines the position of the product within the screen. The best position is the centre of the screen both horizontally and vertically, and it is also the most weighted one in the assessment. The second best position is the middle vertically, but on the right side of the screen; and the third best is the same on the left side. These are followed by placements in the bottom of the screen, and the worst of all are the ones at the top of the screen – at least according to research by the said company (PMA, 2006).



## MEASURING EFFECTIVENESS AT THE CONSUMER'S LEVEL – SELF-REPORT STUDY

However, the above-mentioned indicators only tell us the number and type of brand placements, but this still does not mean that consumers notice the brand, too. The same is true for advertisements: we might have seen a commercial, but we do not necessarily remember it; and even if we remember, we might be unable to identify the brand.

Therefore we must use a method that is often used for such purposes: asking consumers what brand placements they remember from the movie or TV show.

It is practical to start this survey by examining the viewers' spontaneous awareness, that is, simply ask consumers to list the brands they saw in the film. Then the assessment of aided awareness follows: we list all brands, and they must tell us if they remember the product placement of a specific brand. In the latter case it is also practical to include one or two brands that have not appeared in the film. This is important because people who state that they saw these brands are likely to provide unreliable answers to all other questions, and therefore they should not be evaluated.

In addition to surveys, the method of self-administered diaries are also used, which is quite similar to the earlier measurement of radio listeners. Nielsen IAG introduced this method in the United Kingdom (Research-live.com, 2011). Selected viewers, that is, members of the panel, write a "diary" using a web-based system, and keep a record of what brands were displayed while they were watching TV. (Of course, the system is much more complex; we have just mentioned the most important characteristics of the method.)

## EYE-TRACKING TESTS

In addition to questionnaires and surveys, there is another method of examining consumers (viewers) called eye-tracking, which is a practical, but costly tool. This usually involves placing special glasses on the viewer, but there are solutions without glasses, too. The point is that a device follows the movement of the pupil, therefore they can measure exactly for how much time viewers look at each part of the screen, thus finding out what brands he/she may have noticed.

For example, this research method was used to analyse the music video Bad Romance by Lady Gaga (Quirk's, 2011). The video features brands such as iPod, Parrot music storage and player, Heartbeat headphone, Lex Nemiroff vodka, Wii games console, Dr. Dre speakers, HP Envy laptop, and Carrera sunglasses. In this case, the eye-tracking test proved that the number of placements of a specific brand was more important than the size on the screen that the brand was displayed, and if there is another visually attractive thing on the screen, viewers would look at that instead of the brand.

It is practical to combine eye-tracking examinations with the questionnaire method, thus we receive more exact and more credible data. For example, we can find out if viewers just looked at the brand on the screen, or they became aware of it, too.

## Q-RATIO: CONVERSION TO 30-SECOND SPOTS

As we have mentioned before, most big advertisers are well aware of the indicators used in the measurement of 30-second commercial spots, and they are looking for similar indicators for product placement. The "Q-Ratio" methodology of iTVX corresponds to this need, and "converts" brand placement into advertisement (Itvx.net, 2008).



The software takes more than 50 aspects in account, then creates an indicator that shows how many airings of 30-second commercials would be equivalent to the placement of the brand.

According to their surveys there are placements worth one fifth of traditional advertisements, but there also may be ones worth five times as much (Fitzgerald, 2003).

This methodology may be useful from several aspects, but it is usually used for TV programmes, and not for movies. On the one hand, the advertiser receives a number that can be easily interpreted based on its earlier media research knowledge. On the other hand, it allows for more accurate accounting: there are agreements that only require payment based on the viewership brought about by product placement.

Q-Ratio can also be useful in the pre-planning stage as it helps advertisers find out and forecast what product placement solutions might be the best in that case.

At the same time, Q-Ratio is still unable to consider each and every relevant aspect.

## THE NUMBER OF MEDIA APPEARANCES

This issue has more to do with public relations than advertising. The methodology established by Millward Brown Precise is also known as the James Bond effect because each time a James Bond movie is released, several articles are published on the brands used by the secret agent (PMA, 2006).

This measurement is basically an ordinary media monitoring project where researchers count how many articles include the movie and the brand together. Of course media monitoring for such purposes is more complicated in cases when the movie is released in several countries, in all continents. In addition, more detailed measurements define the total of the number of people reached by each medium, that is, the number of people that could have met the content about the connection of movie and brand.

## SOCIAL MEDIA BUZZ, WORD OF MOUTH

Today, the measurement method mentioned above is supplemented by social media monitoring. Movies and TV programmes usually arouse great interest in social media forums, and the question is how actively the audience discusses brands appearing in the movie, how many comments they write about them, and how many times they share related contents, or produce such contents themselves.

Its significance is increasing as "the reaction and activity of the audience is an important and massive tendency as compared to earlier communications methods applied in the market; that is, advertising does not exist in itself anymore, but as a part of the conversation, which can also be shaped by the target audience" (Csordás-Nyíró, 2013, p. 371). The appropriate measurement for this purpose is the monitoring and measurement of social media, that is, so-called "buzz monitoring".



## THE COST OF REACHING A THOUSAND VIEWERS (CPT)

Of course it is also important to measure the cost of reaching the target audience in addition to the number and type of brand placements.

As mentioned above, CPT (an abbreviation for Cost Per Thousand) is an indicator that is often used in traditional media planning, meaning the cost of reaching a thousand persons. The expression CPM (Cost Per Mille) has the same meaning, but is used less often. If this number is lower, the sum is also lower, which is good news for advertisers.

There are efforts for the use of this indicator for the measurement of product placement, too. The indicator "average global CPT" is used in the case of Hollywood movies. The brand owner usually pays the cost in a lump sum, while the movie is still in production (or it has barter costs). From that point the more people watch the movie worldwide, the lower the CPT is.

## THE FINANCIAL VALUE OF BRAND PLACEMENTS

This is also a new area with its own measurements, although there is a debate regarding their background. The Front Row Analysis analyses the following factors: number of viewers, film revenues, integration in the screenplay/scene, product affinity, the method of product placement, etc. However, this analysis only considers cinema screenings, and does not include watching DVDs, broadcasting via TV channels, downloads, etc. The result is defined in USD (Brandchannel.com, 2012).

## EFFECT COMBINED WITH TV COMMERCIALS

Brand placement should not be analysed in itself, but as an aspect of marketing communications as a whole. In that sense, the results of TV commercial effect analysis (of brands using product placement) are also indicators of product placement. The two examples below support this somewhat complicated introduction.

Nielsen Media Research conducted an interesting research in Las Vegas with more than ten thousand participants. They featured 200 consumer brands in 50 screenings as product placements in the movies or commercial breaks. The result was that 46.6% of viewers recognised the brand if it only appeared in commercial breaks, and 57.5% recognised it if it also appeared in the movie (Silye, 2006).

Coca-Cola experienced a similar phenomenon: the recall of its advertisements aired during the talent show American Idol was 49% higher than in the case of the same advertisement aired during other programmes. The reason was probably that the hosts, juries and contestants of American Idol drink Coca-Cola themselves, and the brand also appears in the programme in several other ways (Economist.com, 2005).



## CONCLUSION AND VISION

As we have seen above, although there are already indicators for the measurement of the effectiveness of product placement (and there are several of them), advertisers are still looking for the best solution.

According to research conducted by American Advertising Federation in 2011, 60% of advertisers would like to see even more information about the effectiveness of branded entertainment before spending greater amounts on this (Castillo, 2011).

As the majority of today's corporate marketing people have grown up in the world of television, they best know TV-related indicators. For them, the most important aspect is GRP (gross rating point), an indicator of gross reach, thus they would like to see product placement converted to this. However, the problem with this idea is that the methodology they want to force on product placement was not invented for this purpose. For example, GRP may show if viewers saw a specific product placement (at least their TV set was switched on), but it does not tell if the placement was active or passive, does not describe the way it affected viewers, etc.

Therefore methodologies examining this field will probably further develop and become more sophisticated in the future.



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# Short Term Liquidity Prediction: An End User Perspective

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## *ABSTRACT*

Creating a Short term liquidity forecast dashboard is fairly simple from the technical point of view: All you need is to group all the data from the invoices received, invoices sent and to predict the trends in box office cash receivables end expenses.

The reorganisation of some business processes is somewhat harder: the process of registering invoices at the payment time must be altered. All invoices should be registered as soon as they arrive to the company and not, as usually to the payment day.

Nevertheless, the important and the hardest part is to accurately predict if the payment will be executed in time. Of course, it is a cultural affected issue: in some environments, we need to predict if the invoice will be paid before the due date, while in others the number of days in delay and the probability of default is at stake.

A skilled financial officer knows, based on previous experiences, how a debtor will act in a certain instance. The payment related behaviour is not as indistinguishable as it seems at first sight. It resembles the debtor capacity and motivation to pay the invoice. The capacity can be easily accessed by using external data sources, while assessing the motivation is a bit trickier.

The behavioural patterns analysis might be the key to successfully asses the later.

In this paper we will address all these elements in from the end user perspective and compare them with the currently used practices.

*Keywords:* **Liquidity; Probability of default; Predictive analytics; Business intelligence**

## INTRODUCTION

Business intelligence (BI) is focused in providing the most appropriate view on the company performance using state of the art reporting tools and processes. There are, though two major issues: its lack of ability to predict future performance and its separation from transactional systems: it is limited to creating reports – while data changes are prohibited.

In this paper we elaborate how to overcome these issues on a relevant example of the short term company liquidity prediction. We will address the technical point of view, the organisational barriers, the BI and transactional planning integration, and the predictive analytics issues to increase the prediction usability.

In BI the content and user interface must be optimised to perform the task. The mobile technology offers omnipresence and interactivity, but limits the complexity considerably. Therefore deploying a mobile application requires minimalistic data design approach and the usage scenario planning.

BI is used exclusively for reporting, the data editing prohibition is reasonable. BI data is limited to read only mode to achieve better performance and to prevent data manipulation. For the BI tools to be useable in the planning processes, this limitation must be reconsidered. The uncertain variables: planned data, predictions, assessment, simulation results, combination of predictive analytics and users tacit knowledge results must be interlinked with regular data to create fluid presentation of the current and predicted state of affairs.

When predicting data quality and data scale issues arises. These are addressed two folded: the data quality is addressed by advancing organisational processes in an ERP solution. The low data scale, prohibiting successful prediction analytics implementation is addressed by implying data sharing mechanisms in a common cloud platform (Perko and Mlinaric, in print) and using data stored in clouds.

Financial liquidity can be planned in multiple rolling time horizons, for instance:

1. Short horizon (up to one week): All incoming and outgoing invoices are evidenced and the probability of payment execution is assessed, box office cash flows are planned.
2. Medium horizon (up to one month): Almost all incoming and outgoing invoices are evidenced, the most important are reviewed, box office cash flows are estimated.
3. Long horizon (from one month): important incoming and especially outgoing invoices are planned, box office cash flows are roughly estimated.

In this paper we address the issues of short horizon liquidity planning, focusing on the payment execution assessment.

The paper is organised as follows: in paragraph two the backgrounds are elaborated, in the third paragraph the technical feasibility is evaluated, followed by the potential implications assessment. Finally, the results are summarised.



## BACKGROUNDS

Business intelligence reporting is mainly focused in providing financial results of former business activities (Verkooij and Spruit, 2013, Evelson, 2010, Negash, 2004, Skriletz, 2003, Cody et al., 2002, McKnight, 2002, Perko, 2011), while predictive analytics is focused in explaining the existing state of affairs and on predicting the future (Yao et al., 2015, Brown and Mues, 2012, Perko et al., 2011, Wikipedia, 2011, Yeh and Lien, 2009, Bose, 2009). The integration of BI and predictive analytics is imperative for successful planning, but has not been achieved yet.

One of the most researched predictive analytics topics is predicting the probability of non-fulfilment of the business partners financial obligations. In the financial industry, this is measured with probability of default (PD) (Blochlinger, 2012, Carey and Hrycay, 2001, Crouhy et al., 2000, Du, 2004, Fernandes, 2006, Linares-Mustaros et al., 2013). PD is focused in long term prediction (Hillairet and Jiao, 2012, Perko et al., 2011, Westgaard and van der Wijst, 2001), and has some limitations in assessing the short term liquidity.

Predictive analysis is fundamentally using two approaches: reasoning on correlated facts, as for instance the effects of customer satisfaction on the profit, or analysing previous behaviour in certain situations to predict future behaviour in similar ones. (Crook and Banasik, 2012, Hand and Crowder, 2005, Hutchinson and Quintas, 2008, Kautonen et al., 2013, Kennedy et al., 2013). The use of latter is proposed in this paper.

Nevertheless even the best predictive algorithms can not provide the right solution if the data, they analyse does not includes it. To provide adequate data support, a valid data source must be provided: complete set of transaction level data, explained in transparent way, termed as Big Data (Leefflang et al., 2014, Chen et al., 2012, Bobillo et al., 2009, Markowitz, 2004, Sahgal, 2002, Schroeck et al., 2002).

## TECHNICAL FEASIBILITY

Data on cash flows is already stored in business software suits, as for instance enterprise resource planning (ERP). Though planning is part of the ERP name, these solutions are mainly focused in recording past events. In ERP we can typically find cash flow data in transaction data, in accounting data (AD) and in data warehouses (DW).

There are some issues, related with every type of record:

Transactional data can be stored in multiple tables in structures supporting the financial flow, receiving and issuing invoices. Using this data for analysis could affect the actual work in front and back offices, while the transactional data structure complexity makes it inappropriate for creating transparent reports. The accounting data and data warehouse data could be used. Of these two, the data warehouse data is favoured, since accountancy data provides only accountancy related information and needs restructuring before publishing in interactive reports.

There is a great data structure related issue in using any of the data sources, which needs yet to be addressed: there is no systematic way of including the probabilities of execution in any of the formats:



1. Transactional data: the probability of execution in the future could be technically applied, but would upgrade the data complexity considerably. Additionally if the DW or AD are used to create reports the changes in data would not be imminent and would prevent the interactive use.
2. The AD and DW structures do not permit involvement of probability statements and since they are conceptually read only are therefore inappropriate.

Since none of the data structures is appropriate for the planning issues, an out-of-the-box solution must be implemented. The predictive part of the reporting system must be adaptable. This means predictive data structures, that can be modified must be added in the DW, or directly linked with DW structures. This way the real time simulation and predictive modelling is included in business reporting systematically.

Though this proposal sounds unimportant, it drastically changes the BI read-only concept. In case of predictive analysis the data may-not be read only, but must allow the user to modify it using predictive analytics or its personal judgement.

## REORGANISATION ISSUES

The main future cash flows requirement is to evidence all the expected cash flows. This is in contradiction with the general business data recording workflow, focused in evidencing the business events that are already concluded. To predict future cash flows, the information must be evidenced as soon as it available and actualised in time.

In the case of short time planning side only limited organizational changes are introduced to evidence the existing invoices (in medium and long term this is not necessarily the case), while box office cash can be predicted unis time series.

- The invoices received<sup>1</sup>, must be evidenced as soon as they arrive, and not as previously on the payment day.
- Expected payments in are already evidenced, since they must be issued to the paying partners and customers in time.
- To plan the box office cash flows, an experience based planning can be used, or combined with the time series based predictive analytics (Hill et al., 1996). The quality of experience data and the predictive algorithms is on a high enough level to expect accurate predictions.
- The real issue is in assessing the probability of the payment execution for the invoices sent, where neither data, nor the methods are not up to the task accurately predict the invoice (non) payment in time.

## PAYMENT EXECUTION PREDICTION

In the business environment, where companies struggle to survive, the payment discipline is expected to be rather low. Expressed in analytical terms the ration of companies in stress, confronted with the PD is high in overall population. Nevertheless these companies are still operational and they can be an important partner in daily operations. The existing methodology of PD assessment is focused in predicting probability of default on a company level, it uses company level segregated data, and provides

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<sup>1</sup> The received invoices are generating payments out



a long term prediction of company default. Therefore it is inappropriate to deal with the problem of assessing the invoice PD at daily level, where multiple payment execution strategies may be expected.

When predicting short time payment execution PD must be elaborated more closely. The prediction must support the liquidity planning and scenario generation, thereby we need to answer this question for every day in the next week:

What is the probability that the payment will be executed this day?

The existing methods, use the approach to evaluate the probability of maximal probability at one point and then use natural or linear distribution to assess PD in the remaining days (Linares-Mustaros et al., 2013). By using a multi target prediction system (Petelin et al., 2015) we could predict the PD for all days at the same time.

By answering the question of invoice PD for every day, we can assess the probability that the payment will be executed by any day of the week by summarizing the probabilities of payments by that day.

$$PE_j = \sum_{i=1,j} (1 - PD_i) \quad (1)$$

Where  $PE_j$  is the Probability of execution up to the  $j$ -th day from today and the  $PD_i$  is the probability of default in the  $i$ -th day.

The results can be used in simulations, where only the invoices with  $PE_j$  exceeding the breaking point, set by the operator affect the accumulated amount. For example in an invoice  $PE_1=30\%$   $PE_2=40\%$ , and  $PE_3=30\%$ , the predicted payment day will be on the third day, if the breaking point is set above 70%. If the breaking point is between 40% and 70%, then predicted payment day will be on the second day, if the margin is set below 30%, then the payment is included in the first day. Using this method, the individual payment probability of execution can be adjusted on daily basis, while multiple scenarios (optimistic, realistic and pessimistic) can be easily assessed.

## DATA ISSUES AND BEHAVIOURAL ANALYSIS

To successfully predict invoice defaults on a daily precision, at least the same level data: daily changes of payments execution must be used. At the first hand payment history records stored in a company seems to be an appropriate choice. Company experience is though valid only if it reflects behaviour patterns of the business patterns in such a way, that it can be used in predicting his activities with a certain degree of confidence. Therefore it is insufficient in the sense of data incompleteness when we start new business relations, the cooperation isn't really strong, or when company in stress modifies its payment related strategies.

There are some potentials of acquiring business partners experiences from the business environment on the desired level. First is the informal data exchange, not documented in the literature, but regularly used in the business practise. The second option is evidenced in analysing cloud stored detailed business data. The cloud stored business data emerged as a consequence of ERP providers offering ERP as a cloud service. Harnessing the cloud data for the purpose is nevertheless proposed only theoretically, since the authorities and rules to use this data are not adequately defined. The third option is based on systematically using shared data on business partners, practice often used by financial institutions (Pagano and Jappelli, 1993), that also shows potentials in the business environment (Perko and Mlinaric, in print).

The probability of payment execution prediction models can be generated using mining algorithms: decision trees, neural networks, support vector machines, logistic regression or others, predicting separate predictions for every day, or using multi target algorithms.



The data itself provides insights into behaviour of companies toward different kinds of partners in different situations. Nevertheless using business knowledge to identify those situations and elaborate strategies, company uses in this situations can provide a much better picture of the behavioural patterns company has used in past – and will probably use in the future (Kennedy et al., 2013). Generating a behavioural profile can affect greatly on the accuracy of predicting future behaviour.

## IMPLICATIONS

In the financial liquidity prediction design the we relied almost exclusively on the future data: evidenced before actual execution, or even predicted data. Actually, data stored in transactional systems, accounting data (AD) or data warehouses (DW) is used merely to predict future behaviour. Additionally, to achieve interactivity, using BI to plan possible business outcomes all types of planning must be integrated: data gathering, predictive analytics and business users tactic knowledge based planning in the same data model and are not to be limited by the performance imposed limitations.

Planning must be based on solid data. This requires business processes changes, evidencing potential business results at their earliest possible stage, smartly integrated with the predictive analytics.

Business internal data must be integrated with business environmental data to predict business partners capabilities and behaviour. For this, new cooperation data supported mechanisms must be introduced, in form of data sharing or cloud based predictive analytics.

Business implications can be divided in direct and indirect implications. Proposed solution directly affects the data evidention process, but at the same time it enables the financial officers to proactively manage the liquidity, and use pre-emptive measures, such as negotiations with business partners and financial institutions, using appropriate and risk insurance instruments and fine tune business partners selection.

Indirectly data sharing mechanisms provide insight into partners business practices and policies. This rearranges the business environment drastically. Business practices transparency resolute in actual performance reputation building and much faster elimination of companies not performing according to business relations standards.

## SUMMARY

In this paper we attempted to solve a business issue of short term liquidity prediction. Multiple new approaches are integrated to provide a valid solution. These include business processes reorganisation, business intelligence read-only principle reconsideration, blending multiple business planning approaches, and external business data sources integration in BI systems.

The proposed approaches differ in the research stage, therefore the research methodology ranges from elaborating theoretical proposals for business processes reorganisation and business intelligence read-only principle reconsideration, trough invoking



created prototypes in blending multiple business planning approaches, to suggesting roll out of concepts already used in financial industry to achieve external business data sources integration in business planning systems.

Integration of all of these concepts is required to support the – it seems too simple – task of predicting short term financial liquidity in an operational manner. To prove the technical feasibility we elaborate the business and the technology related issues and provide potential solutions.

Interestingly the elaboration of this relatively small example from the users point of view provides important impacts on technology business intelligence design, limited but nevertheless important direct business consequences and lastly potentially great indirect business consequences, capable of redefining business relations.

It opens multiple research questions; in business data evidencing processes it is the turn from evidencing already executed business events to predicting emerging ones, in BI it is the integration of external data sources, predictive analytics and interactive planning, in business analytics is the integration of external data on transactional level to provide valid behavioural predictions. Lastly, by providing insights into the future behaviour it provides managers with tools to optimize their actions.





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# Perceived Value of Health Service – The Conceptual Model

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## *ABSTRACT*

The knowledge in the field of the perceived value in a marketing literature is in a steep progress. On the other hand., the concept of the perceived value is rarely found in a health marketing literature. In the medicine health care literature we mostly use the concept of patient satisfaction and research models with direct relationship between service quality and the patient satisfaction. Our conceptual model transfers the knowledge from other marketing science to the health marketing. In our article we introduce all elements of our conceptual model, with which we can describe the concept of perceived value of the health care service.

## INTRODUCTION

Nowadays the whole world economy is service oriented. According to some sources (OECD, 2007), the service represents 70 percent of GDP in OECD countries. A health service industry is one of the important ones with high growth potential.

The health care service quality and patient satisfaction are key elements of the European public healthcare systems agenda (Javier Garcí,a – Lacalle&Bachiller P., 2011). Development of a comprehensive approach to improve the health care quality and security is among priorities of the European countries. In researching quality of health services it is important to take into the consideration all possible aspects of quality, which are known to a multidimensional concept. From marketing perspective it is important to analyse perceived service quality, that means to analyse it from point of patient/s view.

The value concept is widely used in various disciplines, such as economics, accounting, finance, production management (Pisnik, 2008, page 6). The role of a costumer changes from that of a mere costumer to a multifaceted role (Wang et al.2004, page 171). Authors (Woodruf, 1997, Woodall, 2003) think that the perceived value will become one of the dominant research concept. Considering the fundamental definition of the perceived value, that is a trade – off between the “give and get” components, we should analyse the benefits and sacrifices as well as antecedents and consequences of the perceived value. If we agree, that the health care system is just one of service systems with its own charecteristics, we can try to make the conceptual model for the perceived value of the health care service. A kind of a partial model can be found in articles of Choi et al. (2004), Abbasi et al (2005) and Chanal&Bala (2010), but this models have weaknesses and are not so integrated and complex, as our model.

## THEORETICAL BACKGROUND

### PERCEIVED VALUE

The perceived value is defined as the costumers evaluation of the usefulness of the perceived benefits and the perceived sacrifices (Zeithaml, 1988).That is, consumers may cognitively integrate their perception of what they get (benefits) and what they have to give up (sacrifices). In the health care, benefits are the results of a good quality service in both the outcome and process domains. Like the service quality assessment, the perceived value has besides emotional components also cognitive components. However, unlike the quality assessment, the perceived value requires the trade – off between the benefits and sacrifices.

Today, the perceived value is considered as one of the most influential antecedent of customer satisfaction (Eggert and Ulaga, 2002) and also loyalty (Cronin et al., 2000). As such perceived value is a relevant issue for the health care services.

### PERCEIVED SERVICE QUALITY

The perceived service quality is the consumers overall perception about quality of a particular product of service in comparison to other available services (Chanal, 2010). The definition of service quality is the customer’s overall impression or assessment



concerning the relative inferiority or superiority of the organization and its services (Zeithaml, 1988; Bitner and Hubbert, 1994). It can be measured by comparing the customer's expectations with the customer's perceptions of an actual service performance (Parasuraman et al., 1985). Providers of medical services need to understand the patient's expectations and try to meet these (Lee et al., 2010). For hospitals, a satisfied patient is very important because he is more likely going to keep using the medical service, follow the prescribed treatment plan, and maintain the relationship with a specific health care provider.

## REPUTATION

Reputation is what, is generally said or believed about a person's character or standing and things characteristics. The reputation is an intangible and a very important asset to an organization, it also has a positive influence on a customer perception on value of a product, on a customer's loyalty, trust and confidence (Pisnik, 2008).

A doctor's reputation positively influences both the patient's trust and satisfaction (Torres et al, 2009).

The results of Wu (2011) revealed that the hospital's brand image has both, a direct and indirect effect on a patient's loyalty. It means that a positive brand image, not only increases a patient's loyalty directly, but it also improves the patient's satisfaction.

In the health care context, Kotler and Clarke (1987) suggested that the hospital's brand image is the sum of beliefs, ideas and impressions that a patient holds toward a hospital. The patients often form a brand image for a hospital from their own medical examination and treatment experiences (Kim et al., 2008). Oliver (1997) noted that satisfaction is in general a psychological state, which is usually the result of emotional expectations and the experience from former shopping behaviours. In the service environment, the customer satisfaction has been seen as a special form of a customer's attitude. It is a phenomenon of post-purchase reflection on how much the customer likes or dislikes the service after experiencing it.

Thus, a favourable hospital brand image helps to strengthen the intentions which patients have for a selected hospital.

## SACRIFICES (PRICE)

Sacrifices from the patient's perspective can be divided into two types: the price that the patient has to pay and nonmonetary costs such as time spent and the mental and physical stress experienced in receiving the care. The nonmonetary costs are substantial in the healthcare services sphere due to the queues and waiting lists that occur, especially in the public system (Moliner, 2009). First of all, the nonmonetary costs, such as time and effort, must be acknowledged since many customers consider time as an important commodity. As a result, anything can be built into products/services to reduce time, effort, and search costs can reduce perceived sacrifice and thereby increase perceptions of the value (Zeithaml, 1988:18). On the other hand, as consumers factored the non-monetary transaction costs into their quality judgments and decisions (Petrick, 2004: 31; Gimpel, 2011:110), it is very important that they should be taken into consideration and not be regarded as any less important than the monetary costs. The nonmonetary costs sometimes might be of more important value than monetary cost, and can also be a reference point for customers while making a purchasing decision (Örgev&Bekar, 2013).



## PATIENT SATISFACTION

Oliver (1997) noted that satisfaction is a general psychological state, and is usually the result of emotional expectations and the experience from former shopping behaviours. In the service environment, the customer satisfaction has been seen as a special form of the customer attitude. It is a phenomenon of a post-purchase reflection on how much the customer likes or dislikes the service after experiencing it (Woodside et al., 1989), and it can also be defined as a fulfillment of the consumer's goals, which was experienced and described by the customers (Oliver, 2006). The consumer satisfaction is the fundamental of a consumer sovereignty (Choi, 2004). Satisfaction of a patient also affects the outcome of a medical practice. The patient satisfaction assessment is becoming an integral part of the strategic processes for the health care organizations (Reidenbach, McClung, 1999).

Moreover, the patient satisfaction is a critical indicator for the health care service organizations. The providers of a medical service need to understand the patient's expectations and try to meet these (Lee et al., 2010). For hospitals, the satisfied patients are important because they are more likely to keep using the medical service, follow the prescribed treatment plan, maintain the relationship with a specific health care provider, and recommend the hospital to other users (Hekkert et al., 2009). Undoubtedly, the patient's satisfaction is the passport to profitability in the hospital setting.

## LOYALTY

A customer's loyalty is not the same as a satisfied customer. A customer's satisfaction is defined as a measure of a customer's expectation being exceeded. The expectation can be predictable. As a consequence, to get a high score and a satisfied customer, all you have to do, is to do what the customer expects from you. Nogami (2009) said that 65 to 85 percent of customers, who switched suppliers, were satisfied or very satisfied prior to their departure. The customer loyalty is an emotional relationship between customers and the company. It is much more difficult to get loyalty from customers than getting them satisfied. Bettencourt (1997) wrote that loyal customers will speak positively of the company product and service. Loyal customers are more tolerant when they feel a little dissatisfied. Kessler and Mylod (2011) wrote that there is a statistical link between satisfaction and loyalty, and that this link is weaker for high-satisfaction hospitals.

The satisfied patients prefer the same hospital for the same or different treatments and may recommend it to their friends and relatives, unlike dissatisfied patients, who may discontinue their treatment from the same hospital. Despite the significance, the public healthcare organizations take the value of loyalty for granted. Namely the loyal patients can add to their success. In other words, a patient's loyalty is essential for healthcare units to retain patients and to survive in the competitive market (Chahal & Bala, 2010).

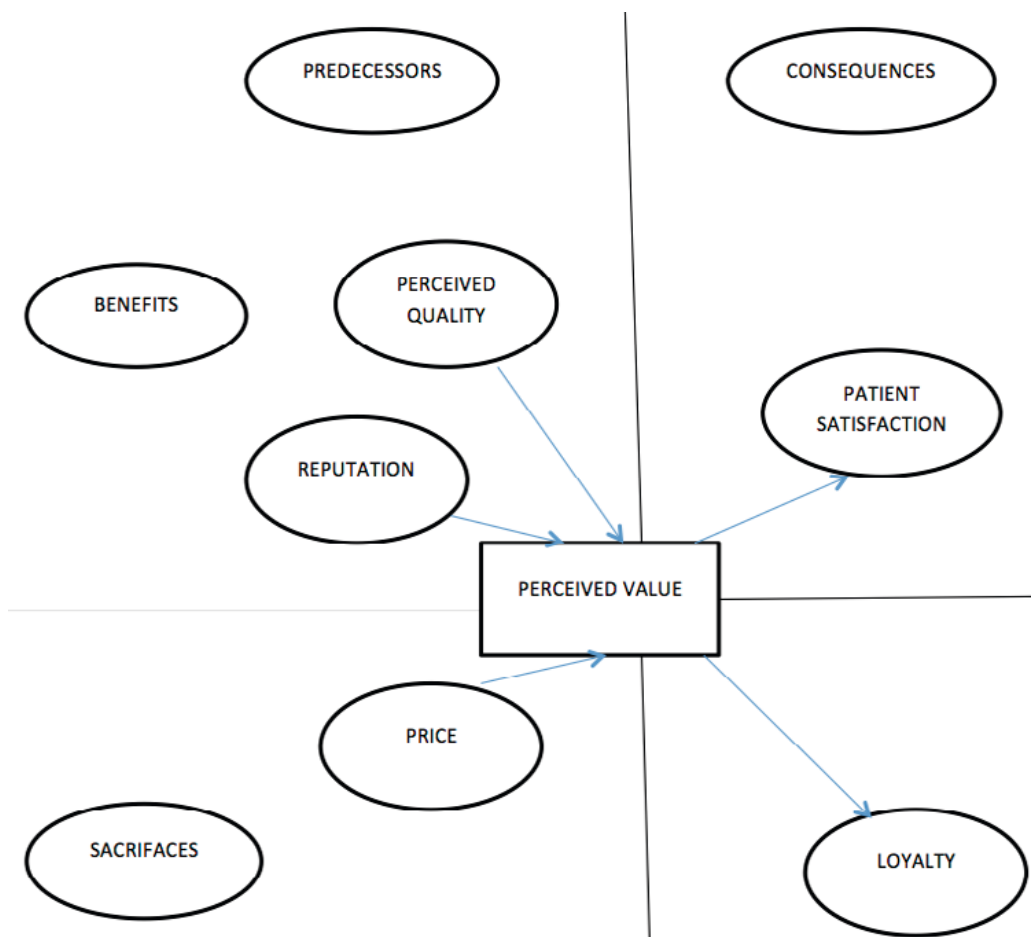




## THE DEVELOPMENT OF CONCEPTUAL MODEL

Based on theoretical knowledge, the conceptual model is drawn in Figure 1.

Figure 1: Conceptual model



The perceived quality is the user's perception of quality of a service compared to the quality of other service providers (Chenal & Bala, 2010). Different authors are suggest a connection between the perceived quality and the perceived value of a service, where a higher perceived quality leads to a higher perceived value.

Other authors as for example Cronin et al (2000), suggest, that in the addition of the direct impact of the perceived quality to the perceived value of a service, the perceived quality also influences on the overall users satisfaction.

From this point of view we can derive the first two hypotheses:

H1: The higher the perceived quality of the health care service, the greater is the perceived value of that service.

H2: The higher the perceived quality of the health care service, the greater is the satisfaction of the patients.

Reputation has an important role in the distinction between different health care providers (Shanti, 2006). There exist direct and indirect influences of reputation that can affect the success of the health care provider. Researchers Chen (2009) and Wood (2000), described a positive link between the reputation and the perceived value and quality of the service. We can also expect the same results for the health care services, therefore we can derive the next hypotheses:

H3: The better the reputation of the health care service provider, the higher is the perceived quality of that service.

H4: The better the reputation of the health care service provider, the higher is the perceived value of that service.

The higher perceived value of the service leads to a more satisfied customer or user. Regarding time duration the success of a service provider is linked to the loyalty of the users. Atilgan et al. (2005) believe, that the loyalty of the users is strongly influenced by the perceived value of the service. We can expect the same for the health care services, from this we can derive the fifth and sixth hypotheses:

H5: The higher the perceived value of the health care service, the greater is the satisfaction of the patients.

H6: The higher the perceived value of the health care service, the greater is the loyalty of the patients.

More doubts arise when we want to describe the connection between the perceived quality of the service and its price.

Hussey et al (2013, pg. 27), in his metaanalysis, which contains all relevant analyses of effect of price on the quality of health care services, concluded, that the link is inconsistent and it can be either positive or negative. On the other hand, many researchers (e.g. Dodds, Monroe & Grawal, 1991; Pisman Korda 2000) suggest, that a higher price leads to a higher perceived value of the service. From this our hypothesis is as follows:

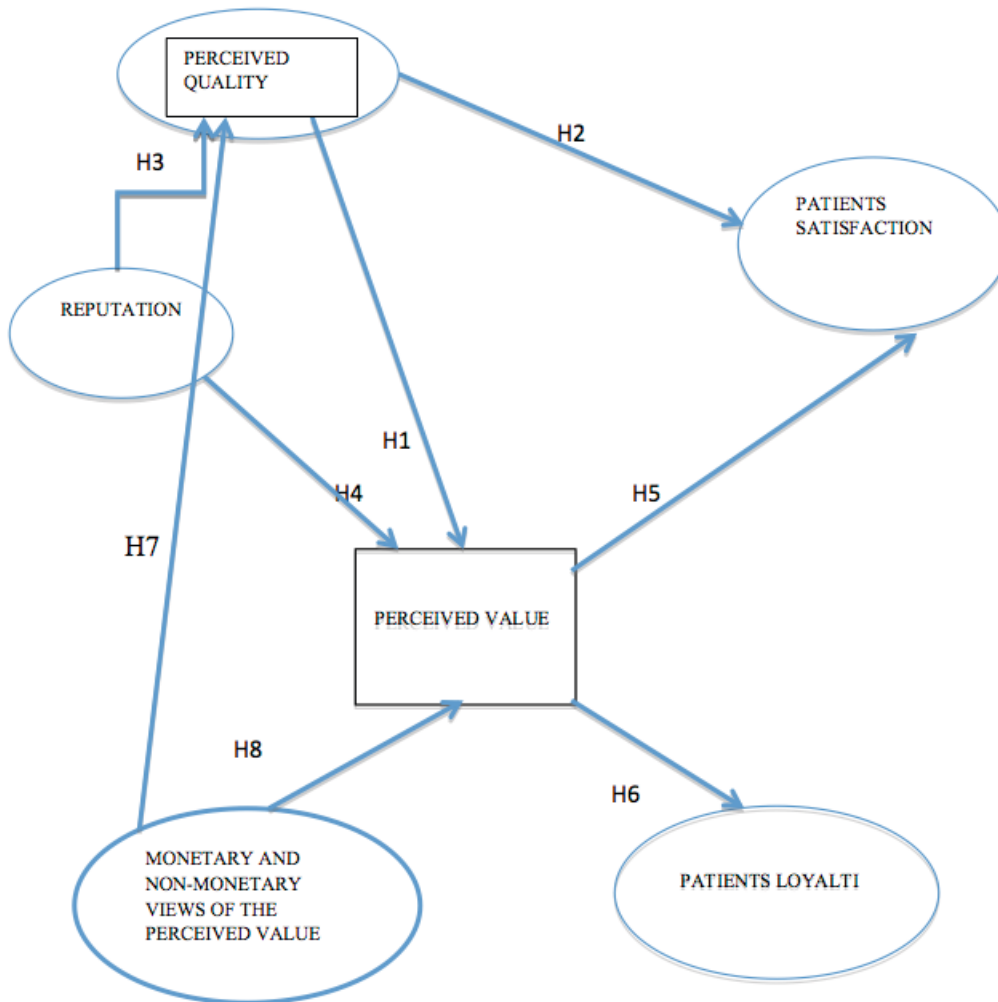
H7: the higher the perceived price of the health care service, the higher is the perceived quality of that service.

Because the perceived price is a part of the equation of the definition of the perceived value, we would expect that the connection between the two is negative. However, the frequency of study of these connections is rare and the results are a lot of times inconsistent. We can assume that the connection is negative and from this we can derive our final hypothesis:

H8: the more favourable is the perceived price of the health care service, the higher is the perceived value of that service.



Figure 2: The conceptual model with hypotheses



## CONCLUSIONS

The knowledge of the concept of the perceived value is increasing in the field of marketing rapidly. However the concept itself can be rarely, if at all, found in the health care literature. In medicine, only the concept of quality can be detected. From this point of view, with our conceptual model of the perceived value we can contribute to science mainly, because our model transfers the knowledge of marketing science to the field of the relationship between the health care provider and the patient.

In our work we introduced the key elements of our conceptual model of the perceived value. Our attempt is to empirically investigate this model and to analyse all the links between the model elements.

The results will show the antecedents as well as consequences of the perceived service value model. Taking both factors of the model into account, this also can be our contribution to the science in the field of health care.

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# State Aid for The Real Economy On The Example of Coal Sector in The European Union - Pre- and Post-Crisis Perspective

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## *ABSTRACT*

The article presents the evolution of the conditions of State aid admissibility to the coal industry, starting from legal regulations within the European Coal and Steel Community, the European Community, and now the European Union. The thesis was formulated that in connection with the expiry on 31 December 2010 of the Council regulation No 1407/2002, on the basis of which the European Commission allowed the aid for the national mining industry in different Member States in the period before the onset of the financial and economic crisis, the immediate cause of introduction of the next regulation of “mining” State aid in the form of Council Decision 2010/787/EU on State aid to facilitate the closure of uncompetitive coal mines, was the intensity of the aid for the mining industry increasing in recent years.

*Keywords: financial and economic crisis, State aid, coal mining sector, legal regulations, the European Union*

*JEL codes: E62, K20, K33*



## INTRODUCTION

Considering the essential context of granting State aid by the Member States of the European Union we can distinguish three main categories of aid, which may be considered as permitted under art. 107 par. 3 of the Treaty on the Functioning of the European Union (TFEU - OJ 2010 C 83/1). The qualification of the aid measure to one of three categories is determined by the purpose for which State aid was intended, and in the case of coexistence of multiple purposes the main purpose determines the result (Evans 1997, p. 25). This division consists of regional aid, horizontal aid and sectoral aid. Regional aid is distinguished by its territorial reference, this aid is granted to enterprises operating in the area characterized by relatively low level of economic development. Horizontal aid admissibility is not dependent on the area covered by this type of aid, but on the purposes to be achieved as a result of granting. These include, for example, the development of small and medium-sized enterprises, research and development, environmental protection, employment and training. Sectoral aid is strictly aimed at enterprises operating in a particular sector of the economy. The basis for recognizing it as compatible with the internal market and admissible is primarily art. 107 par. 3 points c and d TFEU. In this case, the criterion for granting aid is the affiliation of the beneficiary to the given sector. A special place among these sectors is occupied by so-called sensitive sectors, which include synthetic fibres, automotive, shipbuilding, steel and coal mining sector. Additionally, such sectors as agriculture, fishing and fisheries as well as transport can also benefit from this aid.

State aid for sensitive sectors is connected with restructuring processes of respective sectors of the economy and individual enterprises. This aid is permitted in cases where the granting accelerates the necessary changes or the development of these sectors, restores their long-term operation and has a soothing effect on the social and economic costs of changes in these sectors. Sectoral aid is subject to a particularly thorough and careful control due to the nature of specific sectors. There should at least be indicated the low capacity utilization, overproduction, or the fierce competition in the internal market and beyond. State aid for the coal industry is justified by competitive imbalance of coal mined in the Member States of the European Union with coal imported from outside the EU. Since the 50s of the twentieth century some European coal production could no longer compete on the market, mainly due to a reduction in the cost of transporting coal from third countries, the depletion of coalfields with attractive geological conditions and increased labour costs. Hence the European Coal and Steel Community, later the European Communities and now the European Union, authorized the Member States to grant subsidies to the coal industry in order to allow for an organized process of restructuring and closing unprofitable mines.

The aim of this article is to present the conditions for admissibility of State aid for coal mining sector, including regulations made before the financial and economic crisis and the new regulation in the form of Council Decision 2010/787/EU, which from 1 January 2011 allows the European Commission to assess the potential requests for aid for the mining industry. With particular regard to the financial aspect of the application of Council Regulation No 1407/2002, the analysis is carried out to verify the claim that the introduction of another regulation of State aid for mining was due to the increasing expenditure of the Member States for the aid to the mining industry.

## LITERATURE REVIEW

State aid for the coal sector was the case of considerable interest to the community sectoral policy already since the signing in 1951 of the European Coal and Steel Community Treaty (ECSC - Treaty of Rome 1957). Although in art. 4 of the ECSC Treaty there was a clear provision that State aid for the mining sector is prohibited (ECJ, 30/59, para 20), in 1964 the European Commission sanctioned the granting of State aid to the coal industry (CFI, T-239/94, paras 61-64). This would justify the worsening economic



situation in this sector, which was affected by the rising costs of mining in the Member States, the competition of cheaper imported coal and price pressure from alternative energy sources - e.g. crude oil, natural gas (CFI, T-106/96, para 62). Following the premise of improving the situation in the mining industry the Commission issued five decisions that allowed for State aid in connection with covering the costs of restructuring processes: Decision 3/65/ECSC (OJ 1965 L 31), Decision No 3/71/ECSC (OJ 1971 L 3), Decision 528/76/ECSC (OJ 1976 L 63), Decision No 2064/86/ECSC (OJ 1986 L 177/1), Decision No 3632/93/ECSC (OJ 1993 L 329/12). Commission Decision No. 3632, which was released as the last one in the framework of the ECSC, introduced radical approach to generating a significant loss mining industry and allowed for State aid upon fulfilment of the specified purposes. Then it was indicated on improvement of the economic situation of mining, taking into account global prices of coal (with a target lowering the size of granted aid), on preventing the threats to the economic and social situation in regions that have been particularly affected by the total or partial restriction on the operation of mining-sector enterprises and on supporting the mining industry to adapt to environmental protection requirements. These objectives were to be achieved by the use of five possible types of aid specified in this decision, i.e. operating aid, aid to limit the scope of activity, aid to cover the additional costs, aid for research and development and aid for environmental protection. It should be highlighted that the Member States had an obligation to provide each of the mentioned aids directly from the budget, which was intended to improve transparency and to allow verification of the amounts spent. Failure to meet this condition was explicit with the lack of acceptance of the Commission for the given aid measure (ECJ, 214/83, para 30; ECJ, C-441/97 P, para 53).

## COUNCIL REGULATION EC NO 1407/2002

After the expiration in July 2002 of the ECSC Treaty, the legal basis for granting State aid to the coal industry was the provisions of the Treaty establishing the European Community (now the Treaty on the Functioning of the European Union - TFEU). Basing on art. 107 par. 3 point e) and art. 109 TFEU Council Regulation EC No 1407/2002 of 23 July 2002 was issued on State aid to the coal industry (OJ 2002 L 205/1). This regulation on the one hand was meant to enable restructuring and reducing the capacity of the coal sector enterprises, on the other hand - ensuring access to coal in order to improve the energy security of the European Union (Heidenhain 2010, pp. 395-398). This document sanctioned the admissibility of State aid for the coal industry to cover only the costs associated with the extraction of coal to produce electricity, combined production of heat and electricity, production of coke and the fuelling of blast furnaces. This aid could be given to the reduction of activity in this sector (liquidation of certain coal mines) or to the access to coal resources. In the first case it was aid to cover current losses of production unit. Mines, which incurred losses on current activity could benefit from aid provided presenting a liquidation plan (activity of the production units had to be a part of the mine closure plan), whereas all entities permitted to such aid had to close down their activity till the end of 2007. In turn, aid to ensure access to resources could be directed to support the initial investment or current production, but not longer than till the end of 2010. Aid for initial investment was intended for production units which on the basis of an operational and financial plan showed that support for the investment project will provide them with economic efficiency<sup>1</sup>. Aid to current production, or aid to cover current production losses, could be considered compatible with the common market, if the activity of specified production units in the same enterprise formed a part of the plan for accessing coal reserves and, if these units had the best economic prospects, with the particular reference to the level and structure of the production costs. Coal regulation provided for additional aid to cover exceptional costs, which are not related to the current operations of the coal mining sector enterprises so-called "inherited liabilities", including liabilities for social benefits<sup>2</sup>.

1 State aid notified for this purpose could not exceed 30% of the total cost of the investment project, the implementation of which would allow the production units become competitive in relation to the prices of coal of a similar quality from third countries.

2 Categories of costs resulting from the rationalization and restructuring of the coal industry are included in the annex to Regulation 1407/2002.



In all these three exemption from the general prohibition on granting State aid, the foundation to benefit from State aid was the plans notified to the European Commission. Member States granting State aid to the coal sector enterprises were obliged to provide the Commission with all necessary information relating to current situation in the national power industry in order to justify the estimated production capacity forming part of a plan for protection of accessing coal reserves.

## AID GRANTED AFTER 1 JANUARY 2011 - COUNCIL DECISION 2010/787/EU

In connection with the expiring at the end of 2010 the term of the regulation 1407/2002 on 20 July 2010 the European Commission presented a project for a new document setting out the conditions of admissibility of State aid for the coal industry sector (European Commission 2010). It should be emphasized that the expiry of “coal regulation” did not result in an automatic ban on the provision of State aid for the sector indicated. However, in the absence of a new legal framework allowing for certain specific types of State aid to the coal industry, Member States could grant aid only within the limits of the general State aid rules applicable to all sectors. Compared to the coal regulation general rules on State aid significantly limit the possibilities of State aid to the coal industry, especially - but not exclusively – within the aid for the production. The implication of this is important for Member States which face high production costs compared to current and projected world market prices, which means that their coal production is economically uncompetitive and most likely this will also be in the future. In this situation, the expiry of the “coal regulation” would force some countries to close their coal mines. Due to the regional concentration of coal mines (e.g. The Ruhr region in Germany, north-west of Spain, Jiu Valley in Romania), the social impact of simultaneous closure of the mines could be significant. Taking into account the employment in related industries up to 100 thousand of jobs could be at risk. Immediate closure of mines that could occur after a sudden end of the grants awarded under regulation 1407/2002, would overload regional labour markets with a massive inflow of dismissed miners, who would not be able to adequately quickly find employment in other industries, and therefore, in their case, there would be a risk of long-term unemployment. The European Commission therefore had to evaluate various policy options concerning dealing with the possible adverse effects of mine closures that could occur after the withdrawal of subsidy, especially in terms of their social and environmental aspects.

Based on the results of the impact assessment, the Commission has decided to present a proposal for a new regulation of the Council, which on the one hand, would allow the provision of time-limited operating aid, and on the other – would predict aid to cover exceptional costs. New legal instrument regulating aid to the coal industry on procedural grounds could be developed only in the form of a Council regulation on the basis of art. 107 par. 3 point e) TFEU. Acceptance of such a legislative solution was due to three main reasons. Firstly, in accordance with art. 107 par. 1 TFEU any aid granted by a Member State or through state resources in any form which distorts or threatens to distort competition by favouring certain undertakings or the provision of certain goods is incompatible with the internal market to the scope in which it affects trade between Member States, unless the Treaty provides otherwise. Secondly, art. 107 par. 2 TFEU provides that certain kinds of aid are automatically compatible with internal market. Thirdly, the art. 107 par. 3 TFEU lists the types of aid that may be considered compatible with the internal market by the Commission. Particularly important is the art. 107 par. 3 point c), which provides for derogations for aid to facilitate the development of certain economic areas, provided that such aid does not adversely affect trading conditions to an extent contrary to the interests of the European Union. Art. 107, par. 3 point e) provides that other categories of aid compatible with the internal market may be specified by decision of the Council, acting by a qualified majority on a proposal from the Commission. Type of State aid relating to the coal mining sector went beyond the possibilities offered by art. 107 par. 3 point c) TFEU, especially in terms of operating aid, which is generally given in large amounts and for a long time. Therefore, the Commission asked the Council to use art. 107 par. 3 point e) to determine the categories of State aid in the coal sector, which may be considered compatible with the internal market.



On December 10, 2010 Council has taken a decision 2010/787/EU on State aid facilitating the closure of uncompetitive coal mines (OJ 2010 L 336/24), which is valid for the period from 1 January 2011 to 31 December 2027. The aid may cover only the costs connected with coal for electricity production, combined production of heat and electricity, production of coke and the fuelling of blast furnaces in the steel industry, where such use takes place in the Union.

Council decision provides for two types of aid. The first is the **aid for closure** (art. 3). Mines that incur losses on current activity may benefit from such aid provided that they present a “plan of liquidation,” whose deadline does not extend beyond 31 December 2018. All entities authorized to receive such aid, had to operate on 31 December 2009, while the total amount of the aid for closure granted by a Member State must be characterized by a downward trend. The reduction has to be: by the end of 2013 - not less than 25%, by the end of 2015 - not less than 40%, by the end of 2016 - not less than 60 % and by the end of 2017 - not less than 75% compared to the aid granted in 2011. Furthermore, the total amount of closure aid to the coal industry of a given Member State may not exceed, for any year after 2010, the amount of aid granted by a Member State and approved by the Commission in accordance with art. 4 and 5 of regulation 1407/2002 for 2010. The notified aid may not exceed the difference between the foreseeable production costs and foreseeable revenue for a given coal production year. The aid actually paid shall be subject to annual adjustment based on actual costs and revenues, at the latest by the end of the coal production year following the year for which the aid was granted. It should be emphasized also that the amount of aid per one tonne of coal equivalent may not cause that the prices along with the coal delivery from the Union (the so-called “prices for union coal at utilization point”) will be lower than the prices of similar calorific value of coal from third countries.

The second type of aid is **aid to cover exceptional** costs that are costs arising from or resulting from the closure of coal production units, whereas these costs are not related to current production (art. 4). Such aid may be used to cover the costs incurred or provisions made by the enterprises that are closing or have closed coal production units, including enterprises benefiting from closure aid. Such aid may also be used to cover the costs incurred by several enterprises. An exhaustive list of cost categories that can be covered by State aid was included in the annex to Council decision.

It should be highlighted that the Council Decision contains procedural provisions, which are very similar to the provisions of Council Regulation No 1407/2002. They mainly explain how such aid should be notified to the Commission to enable complete assessment before considering approval of the aid. In order to increase transparency and efficiency of the aid provided by the Member States to the coal mining sector, the total aid received by the enterprises is shown in the profit and loss account as a separate item of revenue, as opposed to sales revenue. The maximum amount of aid approved by the Council decision shall apply regardless of whether the aid is financed entirely by Member States or is partly financed by the Union<sup>3</sup>. These rules are designed to allow the isolation of aid measures from the funds obtained from normal business activity in order to ensure better control on State aid.

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<sup>3</sup> Aid authorized under this decision cannot be combined with other state aid within the meaning of art. 107 par. 1 of the Treaty or with other forms of union financing relating to the same eligible costs, if such overlapping leads to the fact that the aid amount is higher than the amount authorized under this decision.

## DATA AND METHODOLOGY

According to EU competition law, State aid for enterprises which have operated in the coal mining sector, should be provided by Member States in accordance with the principles of proportionality and degressivity (ECJ, 31/59, para 88). On the one hand, this meant that the amount of granted aid shall be appropriate to the results achieved, and on the other hand, it was necessary to aim at the gradual reduction of State aid for mines. In relation to the scoreboards prepared by the Commission in the field of State aid (i.e. *state aid scoreboard*)<sup>4</sup>, the resources allocated to State aid for the mining industry in the period covered by Council Regulation EC No 1407/2002 amounted to EUR 16.6 billion in 2003, EUR 8.1 billion in 2004, EUR 6.0 billion in 2005, approx. EUR 3.8 billion in 2006 and in 2007 approx. EUR 2.9 billion for the period 2008-2010 (see table 1). Decreasing intensity of the aid in the mining sector was associated with closing the least profitable mines and - indirectly - with a reduction in sectoral aid for horizontal aid granted to enterprises irrespective of what regions and what sectors they operate, and thus more preferred by the Commission.

*Table 1:* State aid granted to the mining sector by the Member States on the basis of Council Regulation EC No 1407/2002 (in millions of euros)

	2003	2004	2005	2006	2007	2008	2009	2010	Total
<b>Bulgaria</b>	2,5	11	9,4	6,6	:	:	:	:	<b>29,5</b>
<b>Czech Republic</b>	0,2	19,4	0,4	0	0	0	0	0	<b>20</b>
<b>France</b>	1076,7	1029,5	0	:	:	:	:	:	<b>2106,2</b>
<b>Germany</b>	7150,6	3374,3	3010,7	2586,5	2532,6	1913,6	1847,4	1845,3	<b>24261</b>
<b>Greece</b>	18,2	:	:	:	:	:	:	:	<b>18,2</b>
<b>Hungary</b>	12	110,3	42	34	41	36,9	30,7	29,1	<b>336</b>
<b>Poland</b>	5470,9	664,4	256,5	170,9	110,2	157,2	98,3	197	<b>7125,4</b>
<b>Romania</b>	194,6	265,4	82,1	111,4	121,4	95,2	76,8	63,7	<b>1010,6</b>
<b>Slovakia</b>	6,6	1,5	4	5,9	4,2	4	5,5	5	<b>36,7</b>
<b>Slovenia</b>	19,1	16,6	16,3	16,8	18,4	18,3	16,7	11,9	<b>134,1</b>
<b>Spain</b>	2567,6	2520,9	2462	868,1	836,7	813,3	774,4	821,8	<b>11664,8</b>
<b>United Kingdom</b>	36,8	53,6	66,9	13,1	0,5	2,2	:	:	<b>173,1</b>
<b>EU 28</b>	<b>16555,9</b>	<b>8066,8</b>	<b>5950,4</b>	<b>3813,2</b>	<b>3665,1</b>	<b>3040,6</b>	<b>2849,9</b>	<b>2973,8</b>	<b>46915,7</b>

Source: EUROSTAT.

In the course of the regulation 1407/2002 the Commission decisions related to 11 Member States, i.e. Bulgaria, the Czech Republic, France, Spain, Germany, Poland, Romania, Slovakia, Slovenia, Hungary and the United Kingdom<sup>5</sup>. In 2005-2007, the

<sup>4</sup> The State Aid Scoreboard comprises aid expenditure made by Member States before 31.12.2013 which falls under the scope of Article 107(1) TFEU. The data is based on the annual reporting by Member States pursuant to Article 6(1) of Commission Regulation (EC) 794/2004 (OJ 2004 L 140/1). Expenditure refers to all existing aid measures to manufacturing industries, services, agriculture and fisheries for which the Commission adopted a formal decision or received an information fiche from the Member States in relation to measures qualifying for exemption under the General Block Exemption Regulation (OJ 2008 L 214/3).

<sup>5</sup> List of Commission Decisions within a range of public aid in the transport and coal sector is available at: [http://ec.europa.eu/energy/coal/state\\_aid/doc/decisions/decisions\\_list.xls](http://ec.europa.eu/energy/coal/state_aid/doc/decisions/decisions_list.xls) [access: 02.02.2015].





average value of the aid for the mining industry amounted to EUR 4.84 billion, while in the comparable period of 2008-2010 it was already EUR 3 billion. State aid reduction reflected the situation on the coal market. Firstly, the coal consumption in the EU decreased in 2005 by 4.7% compared to 2004, and in 2006 it fell a further 5.4%. Moreover, the production of coal in the Member States underwent systematic limitation due to increasing imports of cheaper raw materials from third countries. Countries such as Bulgaria, the Czech Republic and France completely abandoned granting the aid based on the provisions in regulation 1407/2002. However, this did not preclude the possibility of granting aid to enterprises operating in the mining sector based on the general state aid rules that apply to all sectors. It is necessary to point out the definition of aid determined in art. 107 par. 1 TFEU, which refers to the types of aid, such as regional aid, environmental aid, training aid or aid for research and development.

By analysing the intensity of aid directed to the coal industry 4 groups of Member States can be distinguished. The first group includes the countries which have ceased the coal subsidies for operating coal mines (the Czech Republic, Bulgaria, France, Italy). The second group are the countries that provide operational aid (Romania). The third group includes the countries that have decided that as part of their overall energy strategy, they want to keep the coal mines in the market which are likely to be profitable without operating aid, thus providing only investment aid (Poland, Slovenia, the United Kingdom). The fourth group comprises of those countries that provide both operating aid and investment aid (Germany, Hungary, Slovakia, Spain). The above trend is presented in Table 2.

*Table 2: State aid to the coal industry sector due to the target of destination (in millions of euros)*

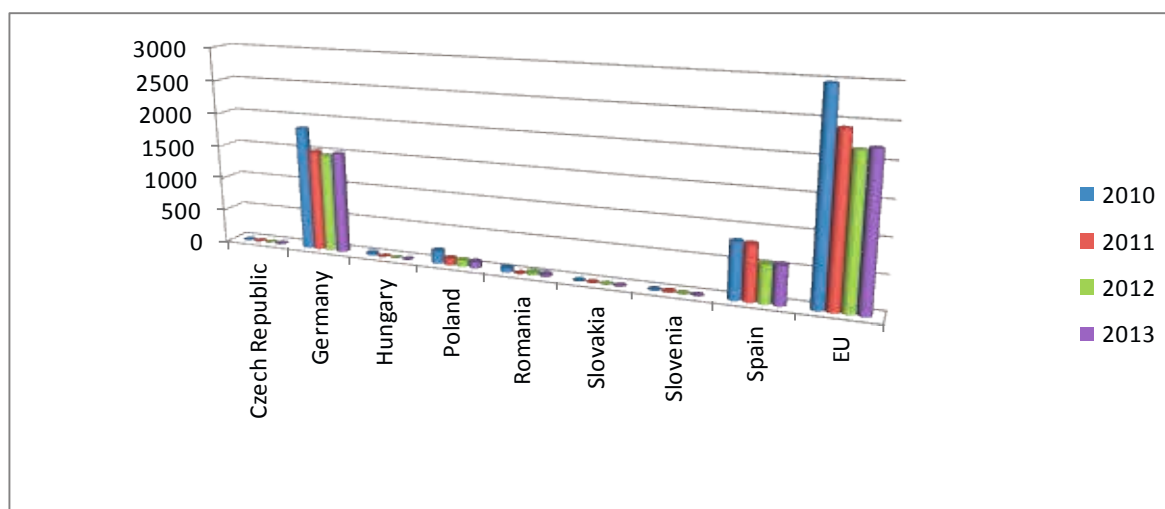
	The average annual value of the aid for current production		The average annual value of the aid for purposes other than current production		The average annual value of the total aid for the coal industry sector	
	2005-2007	2008-2010	2005-2007	2008-2010	2005-2007	2008-2010
<b>Bulgaria</b>	2866,24	1845,32	1961,69	1179,50	4827,93	3024,82
<b>Czech Republic</b>	3,80	0	4,48	0	8,28	0
<b>France</b>	0	0	6,46	0	6,46	0
<b>Germany</b>	2138,62	1289,13	723,53	698,56	2862,15	1987,69
<b>Hungary</b>	42,59	31,22	20,95	3,41	63,54	34,63
<b>Poland</b>	0	0	325,67	109,21	325,67	109,21
<b>Romania</b>	73,75	84,69	0	0	73,75	84,69
<b>Slovakia</b>	1,33	4,11	2,34	0,27	3,67	4,38
<b>Slovenia</b>	0	0	16,10	11,44	16,10	11,44
<b>Spain</b>	562,14	436,17	556,33	367,27	1118,47	803,44
<b>United Kingdom</b>	0	0	38,92	0,78	38,92	0,78
<b>EU 28</b>	2866,24	1845,32	1961,69	1179,50	4827,93	3024,82

Source: own calculations based on DG Competition.

Taking into account two periods which concern respectively the years 2005-2007 and 2008-2010 it should be noted that the vast majority of countries which support domestic mining industry, limited the aid to this sector. The exceptions are only Romania and Slovakia, for which we can observe an increase in operating aid granted. It should be distinguished that the four countries have finished granting the aid. France closed its last coal mine in 2004, whereas in 2006 authorized a private enterprise, which by definition was not to receive any subsidies, to start mining activity in a new open-cast mine in the area of *L'arc* (Gardanne). The Czech Republic privatized previously state-owned coal mines and ceased granting subsidies, which led to a significant reduction in both mining and employment. Whereas Italy had one active coal mine in Sardinia, for which no state aid was notified to the Commission. In these three countries, the restructuring process was completed.

In terms of permissible investment aid the United Kingdom, Poland and Slovakia have limited their subsidies for mines, whereas the United Kingdom and Slovakia have completely privatized their mines, which were previously owned by the state. In Poland, the privatization process is underway. The restructuring process of the coal mining industry in these countries ended in such an extent that all mines which were far from reaching break-even point ceased their operations. In contrast, Germany, Hungary, Romania and Spain remained operating aid schemes on the basis of art. 5 par. 3 of coal regulation. In the case of these countries there was very little probability that their domestic mining industry will survive without granting operating aid.

*Figure 1:* State aid for the mining sector granted by the Member States on the basis of Council Decision 2010/787/EU in 2010-2013 (in millions of euros)



Source: EUROSTAT.

Coal Regulation provided for two different instruments for facilitating the closure of mines that are not competitive on the world market, i.e. closure aid, which was the aid covering the operating losses of mines until the date of closure, and aid for inherited liabilities, which covers certain categories of social and environmental obligations resulting from the coal industry. The process of closing unprofitable mines was carried out in all Member States that produce coal, with the exception of Italy. Germany, Spain and France have granted closure aid to alleviate the social consequences of closing the mines. Without the payment of closure aid, closing the mines took place in three countries (Hungary, Slovakia, Poland). Then the activities of the second instrument have been taken by the Czech Republic and France, whose governments continued paying subsidies for acquired social and environmental commitments. Other Member States, with the exception of Hungary and Italy, have taken over to a certain extent acquired social and environmental costs not only for closed mines, but also mines that were still active.

Figure 1 shows the amount of aid for the mining sector in 2010-2013, which includes the first three years of the Council Decision 2010/787/EU. According to current provisions the value of granted aid did not exceed the reference value from 2010 - both in relation to all the Member States providing aid for this purpose, as well as for each of the countries separately. It should be noted that three countries: the Czech Republic, Hungary, Slovakia have already ceased granting the aid. Thus the aid for mining industry is provided only by five Member States: Germany (EUR 1504 million in 2013), Poland (EUR 93,3 million in 2013), Romania (EUR 33,4 million in 2013), Slovenia (EUR 4,7 million in 2013) and Spain (EUR 568,1 million in 2013). In 2011-2013 State aid for mining industry had a downward trend, whereas the value of aid began nevertheless to grow in 2013.



## RESULTS AND DISCUSSION

Council Decision 2010/787/EU was taken in the conditions indicating that the production and consumption of coal in Europe in the future will continue to decline and that despite the development of new mining technologies, coal mines are and will be more expensive to maintain than in the countries exporting coal, such as Indonesia, Australia, South Africa. In addition, it was pointed out that compared to the world's crude oil or natural gas reserves, Europe has the most substantial reserves of coal, which gave direction to the mining industry in many Member States. Thus, even watching the first decade of the twenty-first century the slow process of restructuring of the mining industry in some Member States, it was not difficult to conclude that the mining sector which is deprived of access to State aid will not meet the rules of competition and will fall, causing severe consequences in the regions already affected by high structural unemployment and destroyed environment. The possibility of granting State aid - although on more restrictive conditions - was thus justified by the principle "too big to fail" known from its application to the banking sector, which meant that mining in some regions and even in Member States is too important employer and despite bringing regular loss is unlikely to be liquidated. This factor is thus closely linked to the effects for the energy sector of the financial crisis, which in Europe began with the collapse of Lehman Brothers Bank in 2008. The transmission mechanism in this case was very simple: the deteriorating economic situation due to limited opportunities for investment by enterprises of the real economy – with contribution of the limited access to bank loans – leads to decrease of energy consumption and demand for coal.

Thus starting the implementation of Council Decision 2010/787/EU of 10 December 2010 falls on financial crisis continuing since 2008, which confirmed that even the countries characterized by low cost mining depend on global coal prices. The financial crisis has caused a sharp deterioration in the economic situation of many countries, including the fastest growing, but also the most "carbon-intensive" China and India. This in turn led to a decrease in demand for energy and as a result changed the trend of energy prices from upward to downward. Coal prices fell from USD 220 per tonne in July 2008 to just USD 70 per tonne in January 2009. Since mid-2011, there is the decline in the price of coal - at the end of 2014 coal prices according to index-ARA (Amsterdam-Rotterdam-Antwerp) stood at USD 75-76 per tonne.

In light of the above considerations the question therefore raises whether in the current macroeconomic situation, coal can gain and maintain a competitive position in the market of energy carriers without State aid? Even before the financial crisis, a number of "traditionally mining" Member States have decided to end coal mining. Other countries such as the Czech Republic, Poland, the United Kingdom and Spain continued the production, which at that time of high energy prices on world markets was profitable. However, bringing the effects of the crisis to the mining sector in the form of low coal price, it is expected that the projects profitable even a few years ago, may again require significant support from the State. It should be highlighted that it is only up to the Member State to decide whether to grant mining support or not. Such a situation can currently be seen in Poland, where, under pressure from the trade unions the authorities abandoned the unconditional closing of unprofitable mines. The agreement implies that some of these mines will indeed be a part of Mine Restructuring Company, with allocated PLN 2.3 billion (approx. EUR 545 million), but not in order to extinguish their activity. Mines are to be restructured, and later sold to potential investors. The agreement of unions and the government indicates that everything will be in accordance with Council Decision 2010/787/EU, according to which State aid for mines may be granted only for their closing and only until the end of 2018. The interpretation of this plan is that at the time when the Mine Restructuring Company will sell mines, it will simply ask the government for aid - it will be included in the price of the mines. In addition, it can be concluded that the Polish government believes that with the cost of PLN 2.3 billion at least one or two years of peace were gained, until finding an investor. However, the European Commission interprets the decision 787 totally differently than the Polish government, as one of the key conditions for granting aid for mining is the irreversible closure of mines. The Commission therefore cannot give permission for State aid, which is not intended to facilitate the closure of the mines, and the investment and restructuring in these mines are not allowed. According to the Commission's interpretation the operating losses in the mines may be covered in the mines "irrevocably destined for closure by the end of 2018", only the extraordinary costs incurred after the closing (e.g. water pumping) can be covered longer - until 2027. In addition, Poland notifying Brussels aid plan for mines, must at the same time present a plan of their closure.

Discrepancies in interpretations appear also in terms of the amount of aid possible to grant. In accordance with art. 3 point g of Council Decision 2010/787/EU annually it cannot be more than aid for mining granted in the given country in 2010, which means that the amount of support may not exceed PLN 400 million per year. Meanwhile, Poland already in 2015 intends to spend on aid for mines PLN 1 billion, in 2016 PLN 900 million more. Why is the Commission able to determine exceeding of the aid limit? In 2010 Poland for the first and the last time provided the support on investments for mines, which was indicated in the EU laws at the time. It was allocated exactly PLN 400 million from the budget for this purpose. Moreover, according to art. 108 TFEU, until the Commission does not approve State aid plan, Member State may not grant such aid, and this means that “theoretically” Polish government has no right to pay out money to the Mine Restructuring Company for the mines. Waiting for the Brussels agreement would mean that the miners will not get a salary during this time, because after all, Mine Restructuring Company does not have the money.

What is therefore the case of the planned in 2015 aid for Polish mines? Firstly, the lack of specific regulations in the current Council Decision 2010/787/EU does not block the opportunity to grant aid, and it does not make this aid automatically illegal. Secondly, the ability to provide aid for mining will really depend on the will and creativity of the Member States. However, in each case of aid for the mining sector, the starting point for assessing the admissibility of providing aid is the definition of aid incompatible with the internal market defined in art. 107 TFEU and conditions for notification of such aid to the European Commission, as stated in art. 108 TFEU.

## CONCLUSIONS

In the Green Paper on the European Union’s energy security published in 2000, was formulated very important - from the point of view of the problem taken in the article - methodological approach of the European Commission relating to the admissibility of State aid for the mining sector and its compatibility with the internal market (European Commission 2000). Namely the Commission took decisions about the future of the coal industry, given the lack of existence of any possibility of achieving competitiveness in this industry on the world market. Competitive imbalance between the production of coal within the European Union and imported coal from outside the area forced the coal industry to take decisive restructuring measures, including a significant reduction in production capacity. As a result, Europe has become largely dependent on external supplies of primary energy sources, which violated the European strategy for the security of energy supply, taking into account the development of national sources of primary energy used in particular for the production of electricity. Therefore, the European Parliament on 16 October 2001 adopted a resolution on a European strategy for the security of energy supply, which recognized the importance of coal as a national source of energy. Strengthening the EU’s energy security justified maintaining the possibility of coal production taking into account the financial aid of the country in the sector while increasing its efficiency and reducing the size of the subsidy.

Green Paper records were reflected in the adopted on 23 July 2002 Regulation 1407/2002, which was rather an act of acceptance of the fact that the coal industry in the European Union is not and will not be able to operate under market conditions. Therefore, the primary purpose of this document was to continue the restructuring process of the mining industry in the Member States and to improve the security of energy supply to the EU market through the use of coal for this purpose, provided receiving reasonable and acceptable costs of its acquisition. Therefore, in line with the strategy of the EU’s energy security, coal gained a reputation of a strategic fuel whose production could be subsidized in order to mitigate the potential energy crises. **However, the thesis stated at the outset must be rejected**, because taking into account the figures presented by the General Directorate on Competition, it should be noted that the intensity of aid to the coal industry decreased each year, showing the same downward trend. In the years 2004-2009, the value of the granted aid amounted respectively to EUR 16.6 billion, EUR 8.1 billion, EUR 6.0 billion, approx.



EUR 3.8 billion, EUR 3.7 billion, EUR 3 billion, EUR 2.8 billion and EUR 3 billion. In a comparable 3-year periods 2005-2007 and 2008-2010, public aid for the mining industry averaged for all 27 member states of EUR 4.84 billion and EUR 3.03 billion. The above confirms the view contained in the Council Decision 2010/787/EU that a small proportion of subsidized coal in the overall energy mix does not justify the further maintenance of such subsidies in order to secure energy supply in the European Union. In addition, the indefinite support for uncompetitive coal mines is not justified by EU policies promoting renewable energy sources and sustainable and secure low carbon economy. In 2011-2013, State aid for the mining sector did not exceed the level of 2010, which indicates compliance by Member States with expenditure rules introduced by Council Decision 2010/787/EU. It is therefore concluded that the Council Decision of 10 December 2010 expresses sectoral state aid system proposed by the Commission, which should be regarded as a transitional system, leading to the full application of the general rules on State aid to the coal sector. This forms the question, however, whether in formed by financial and economic crisis macroeconomic realities will there be a need for a new form of regulation of admissibility of State aid for mining? Nevertheless, it would be rather a very specific regulation and resulting from the fact that certain issues are not just in any existing State aid framework compatible with the provisions of the Treaty on the Functioning of the European Union.



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# Enterprises Between Environmental and Economic Concerns

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## *ABSTRACT*

With the increased number of discussions about how enterprises satisfy different requirements of stakeholders, the need exists to better understand relations between enterprises' concern for the environment and economic results and their allocation of resources to environmental protection. Using data from a study of employees and business students (as future employees), we built on existing literature to examine a suite of theoretical cognitions that have been proposed to explain the influence of employees' values on concern for environment, concern for enterprises' results and their preparedness for using resources for environmental protection. The results indicate that universalism and benevolence (for employees) and benevolence and security (for students) are strong positive predictors of concern for the environment. Security and tradition (for employees) and tradition (for students) are strong negative predictors of concern for the environment. Concern for the environment is strongly positively correlated with the allocation of resources to environmental protection, for both groups.

*Key words:* **economic concern, environmental concern, personal values, resource allocation for environmental protection.**

## INTRODUCTION

In the global economy, all organizations—especially enterprises, as the most influential group of organizations in modern society—will have to be very competitive and hence innovative (Anderson et al., 2014; Baumol et al., 2007; Korten, 2009; Laurent, 2003; Mullins, 2010; WCED, 1998). The data indicate that modern enterprises tend to holistically satisfy legal, market, stakeholder, and environmental requirements with their internal and external actions (Buchanan and Huczynski, 2010; Peet and Hartwick, 2009). The existence and development of enterprises depends on their ability to achieve important aims as well as better understand behaviors and the ways in which to meet environmental requirements (Korten, 2009; Laurent, 2003; Waddock and Bodwell, 2007).

Based on the selected theoretical cognitions (Mullins, 2010; Papagiannakis et al., 2012; Waddock and Bodwell, 2007; WCED, 1998) and our own experiences in business practice (Potocan, 2009), we determined that the modern enterprise develops as an entity consisting of economic, ecological, social, and ethical goals as well as an entity for all goals in synergy for its business. Table 1 presents important levels for enterprises working, the selected levels for the consideration, the selected aspects of consideration of enterprises, and the basic criteria for the evaluation of working and the behavior of enterprises for our research.

*Table 1: The Holistic Consideration of Working and the Behavior of Enterprises*

Criteria by levels	Individual Performance Criterion	Corporate Performance Criterion	Societal Performance Criterion	Global Performance Criterion
Economic Imperative	Individual prosperity	Corporate profitability	Societal Wealth	Global Wealth
Ecological Imperative	Individual eco-efficiency	Corporate eco-Efficiency	Societal eco-efficiency	Global eco-efficiency
Social Imperative	Individual quality of life/well-being	Corporate reputation	Societal quality of life	Global quality of life
Ethical Imperative	Individual VCEN	Corporate VCEN	Societal VCEN	Humankind's VCEN
All aspects in synergy	Individual well-being and sustainable life index	Corporate sustainable working/behavior index	Societal sustainable development index	Global sustainable development index

## LITERATURE REVIEW

Modern literature investigations and business practices include different solutions for researching the relationship between enterprises and their natural environment. The current study classifies the different theoretical and practical cognitions about this theme into two general groups. The first group includes social (e.g., economic and business) sciences that are oriented along the discussion about relationships between enterprises and their natural environment (e.g., green business concepts and theories) (Davis et al., 2008; Korten, 2009; Mele, 2012). We use their cognitions about the existence of a variety of business goals, needs to be balanced, human impacts on business, and mezzo organizational theories (Blackburn, 2007; Davis et al., 2008; Mudrack and Mason, 2013; Peet and Hartwick, 2009; Mullins, 2010).

The second group includes sociological sciences (e.g., philosophy, psychology, sociology), which are oriented to the environmental conservation and concern of enterprises for the natural environment (Adams, 2008; Haq and Alistair, 2011; Raven and Berg, 2003). This group is mostly based on environmentalism as a science, philosophy, and social movement (Adams, 2008; Haq





and Alistair, 2011; Raven and Berg, 2003; Wray-Lake et al., 2010). We use their cognitions about protecting natural resources and ecosystems, the need for the development of suitable behavior, and the influence of personal Values/culture/ethics/norms (VCEN) on environmental protection. Most of these studies exclude economic performance (Karp, 1996; Stern and Ditz, 1994; Schultz and Zelezny, 1999).

Research studies on values, including their influence on work and the behavior of enterprises, are widely considered in the management literature. Authors have examined the methodological repertoire for the consideration of values (Hofstede, 2001; Ralson et al., 2011; Ralston et al., 2013; Rokeach, 1973; Schwartz, 1992, 1994, 2006). We adopted a questionnaire from the Schwartz's (1992, 1994) value survey, focusing on environmental questions (Karp, 1996; Schultz and Zelezny, 1999; Stern and Ditz, 1994). The characteristics of values and their role and importance for enterprises are based on the cognitions of Rokeach (1973) and Schwartz and Bilsky (1987). We consider the basic cognitions about the influence of values on work and behavior from England (1967), Posner and Munson (1979), and Ralston, Gustafson, Cheung, and Terpstra, (1993).

Research studies in this field primarily confirm the impact of personal values on environmental issues. For example, Axelrod and Lehman (1993), Kimmelmeier, Krol, and Hun Kim (2002), and Dietz, Fitzgerald, and Shwom (2005) recognized and defined a set of important factors influencing pro-environmental behavior. Meanwhile, Stern (2000) identified several important factors that influence behavior orientation. Stern and Ditz (1994), Karp (1996), and Schultz and Zelezny (1999) recognized personal values as an important source defining relationships with the environment.

The literature identifying the influence of personal values on selected environmental issues makes it evident that:

- either the abbreviated scale of the Schwartz value measurement (Schultz and Zelezny, 1999; Stern and Ditz, 1994) or the full range of values (56 values) is used (Karp, 1996);
- the impact of values on environmental issues is primarily examined by using single and multiple regression (Aoyagi-Usui et al., 2003; Karp, 1996; Schultz and Zelezny, 1999), although more recently these relationships have been tested using structural equation modeling procedures (Nordlund and Garvill, 2002; Oreg and Katz-Gerro, 2006);
- the mainstream of surveys focus primarily on student populations (Alibeli and Johnson, 2009; Cordano et al., 2010; Karp, 1996; Schultz et al., 2005; Schultz and Zelezny, 1999), whereas other researchers have used nationwide random samples that have also included employees (Aoyagi-Usui et al., 2003; Nordlund and Garvill, 2002); and
- the majority of studies used the environmental paradigm, developed by Dunlap and Van Liere (1978) and revisited by Dunlap, Gallup, and Gallup (1993), have sought to measure general environmental attitudes.

Our study contributes to the literature by a) using the complete Schwartz values survey (all 56 single values); b) simultaneously examining the influence of personal values on concerns for the environment and concerns for economic results; c) investigating the relationship among personal values, concern for the environment, and devotion of resources to environmental protection, d) examining the path-relationships among concern for the environment, concern for economic results, and devotion of resources to environmental protection; e) comparing our results for employees and business students with the results of previous studies; and f) basing the analysis procedures on structural equation modeling.

Based on the cognitions outlined herein, the following four hypotheses were postulated:

H1: Personal values significantly predict attitudes toward concern for the environment.

H2: Personal values significantly predict attitudes toward concern for economic results.



H3: Giving priority to the concern for the environment is positively related to the devotion of resources for environmental protection.

H4: Giving priority to the economic results is negatively related to the devotion of resources for environmental protection.

The hypotheses concerning the impact of personal values on attitudes towards concern for economic results and the environment were kept very general as we go beyond prevalent presupposing which single values predict which concerns (e.g., Elm and Radin, 2012; Karp, 1996; Schultz and Zelezny, 1999; Shafer et al., 2007). Thus, we consider the impact of all groups of personal values on economic and environmental concerns. This approach can contribute to the more comprehensive understanding and consideration of the research problem.

## RESEARCH DESIGN

### RESEARCH MODEL

The hypothesized model consists of 13 latent variables. Since these variables cannot be observed directly, several manifest variables serve as indicators of the underlying construct they are presumed to represent. The proposed model evaluates how personal values (represented by 10 latent construct groups of values) predict and influence the level of concern for the environment and concern for economic results. Furthermore, the model evaluates how the concern for the environment and concern for economic results predict the devotion of resources to environmental protection. As the concerns for the environment, economic results, and devotion of resources to environmental protection are not assumed to be perfectly predicted by associated constructs, the dependent variables include a residual ( $Z_1$ ,  $Z_2$ , and  $Z_3$ ). Therefore, the question of the plausibility of the multidimensional structure of latent variables must be investigated.

### METHODS USED

**Participants.** The sample for this study includes 599 employees working in Slovenian organizations and 301 post-graduate business students at the Faculty of Economics and Business (FEB) Maribor, Slovenia. Data were obtained through computer-assisted telephone interviews (CATI) of employees in Slovenian organizations in 2013. Altogether, 1,000 organizations were contacted, and 599 usable answers were obtained from their employees. The sample meets the basic criteria for data (i.e., reflects representative regional coverage, basic activity structure of organizations, and industry-based structure of the national economy). Data for business students were collected during a management course at FEB in spring 2013. All participants in our survey participated voluntarily.

**Sample characteristics.** By briefly outlining the demographics of our sample, we can postulate following. The average age of employees is 33.3 years and students are 21.9 years. Among employees, 68.8% are females and 31.2% are males; among students, 69.8% are females and 30.2% are males. Employees have on average 11.22 years work experiences. Regarding employees' education, 53.6%



have bachelor degree, 42.2% high school, and the rest have master's or doctorate degrees. All students have finished high school. Regarding employees' current position in the organization, 67.1% are non-supervisory staff while 20.2% are first-line managers, 11.0% are middle managers, and 1.7% are upper-level managers. In terms of organizational size, 61.1% of employees work in organizations with fewer than 100 employees, 28.2% work in organizations having between 100 and 1,000 employees, and 10.7% work in organizations with more than 1,000 employees. The employees who responded to the survey were from organizations operating in agriculture, mining, forestry and fishing (1.7%), construction (2.5%), manufacturing (24.0%), transportation, communication, utilities (9.7%), the wholesale and retail trade (19.2%), finance, insurance, and real estate (14.2%), services (9.0%), public administration (9.7%), healthcare (1.7%), and other (8.3%) industries.

Data analysis. In our examination we go beyond the single and multiple regression analysis approaches. We use structural equation modeling (SEM) techniques to examine the impact of personal values on the concern for the environment, concern for economic results, and the devotion of resources to environmental protection. Using SEM enables us to estimate the multiple and interrelated dependence relationships between groups of values and the three latent variables (i.e., concern for the environment, concern for economic results, and the devotion of resources to environmental protection) simultaneously. We tested our model using the AMOS program, following the suggestions of Byrne (2010).

In proposed model, we found all latent variables to be reliable. Including variables referring to personal values in a goodness-of-fit test will yield a poor goodness of fit when using AMOS due to the interdisciplinary nature of our research (i.e., the impact of personal values on issues targeting the allocation of resources for environment protection). Thus, we presupposed that, when including the reliable factorial structure of the Schwartz personal values (Schwartz, 1992, 2006), the model will reflect the data well. This approach is consistent with previous approaches in this field (Anderson et al., 2014; Schultz and Zelezny, 1999; Shafer et al., 2007; Wang and Juslin, 2011). In our framework, we examined only the reliability of the environmental model (Byrne, 2010).

The hypotheses will be tested for employees in organizations and then business students using the final model. In line with research aims, we used two samples to reveal possible differences among employees and future employees as well as the role of personal values for each sample.

## RESULTS AND DISCUSSION

### GOODNESS-OF-FIT STATISTICS

Given the limited space, we will briefly summarize the goodness-of-fit statistics for the environmental model. To test the goodness of fit of the hypothesized model, we applied the most frequently used absolute and incremental fit measures (e.g., chi-square, CFI, and RMSEA). Figure 1 presents the measurement and path-model for the combined samples of employees and business students ( $N = 900$ ).

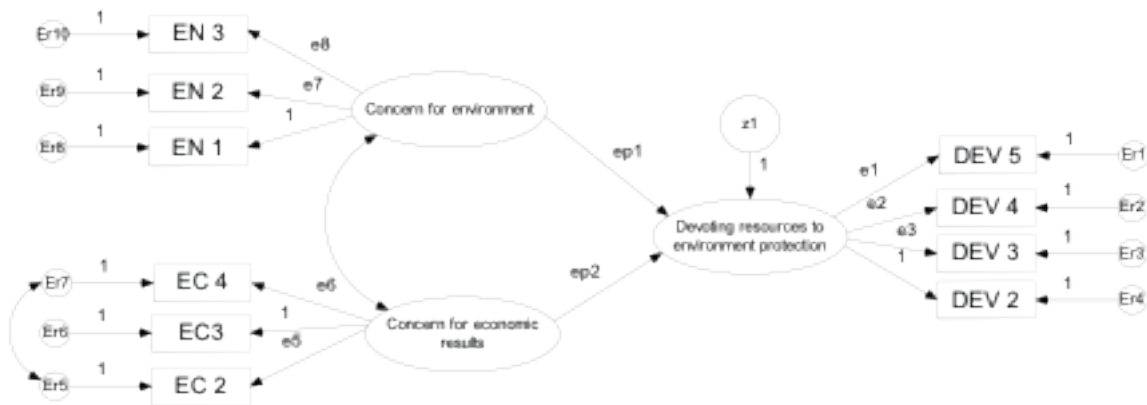


Fig. 1: A final hypothesized model of relationships in the environmental model

### RESULTS OF HYPOTHESIS TESTING

**Employees.** The impact of the personal values on employees’ attitudes toward devoting resources to environment protection, mediated by concern for environment and concern for economic results, is outlined in Figure 2.

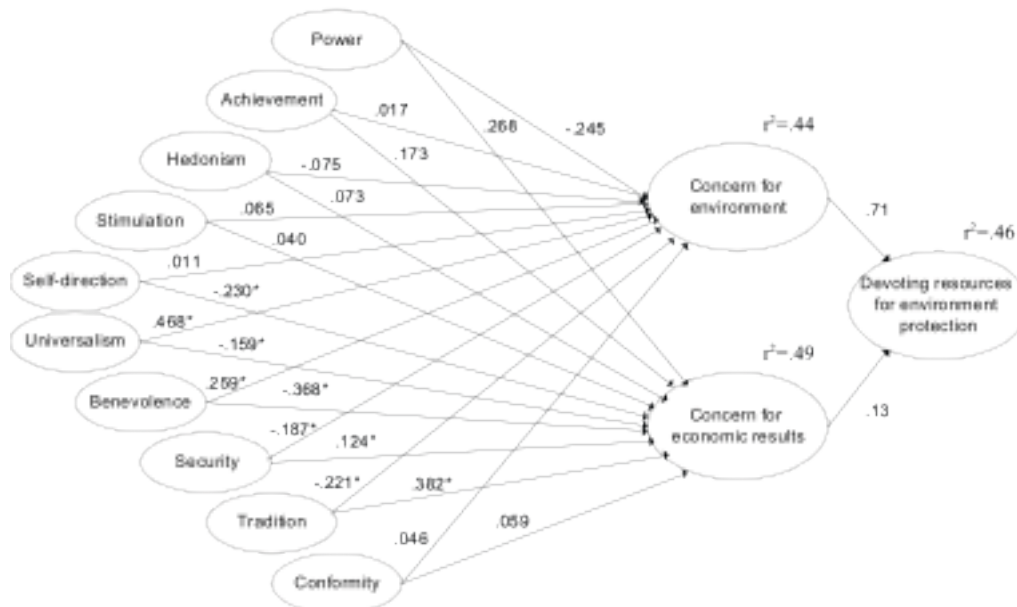


Fig. 2: The final model of the causal structure for predicting the level of devotion of resources to environmental protection—employees

The strongest effects on the concern for the environment come from universalism, benevolence, tradition, and security, thereby supporting Hypothesis 1. In other words, as the importance of universalism and benevolence increases, so does the concern for the environment. On the other hand, as the importance of tradition and security increases, concern for the environment decreases.

The strongest effects on the concern for economic results belong to tradition, benevolence, power, self-direction, universalism, and security, which supports Hypothesis 2. As the importance of tradition increases, so does the priority of concern for economic



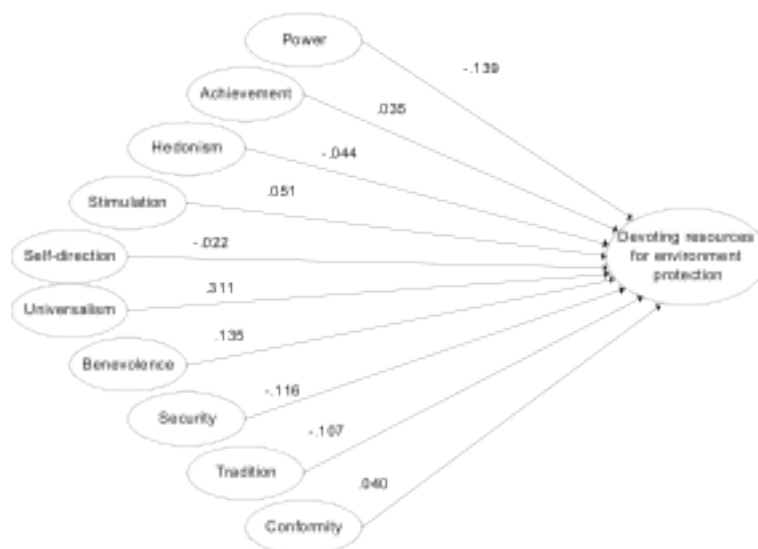
results. Meanwhile, as the importance of benevolence, self-direction, power, and universalism decreases, the priority for economic concern increases.

The results indicate that concern for the environment significantly and positively impacts the level of devotion of resources to environmental protection ( $\beta = .71, p < .001$ ). Thus, higher concern for the environment is associated with a higher devotion of resources to environmental protection. These findings confirm Hypothesis 3.

From a statistical viewpoint, the concern for economic results significantly and positively impacts the level of devotion of resources to environmental protection ( $\beta = .13, p < .05$ ), although this association is very weak and of little practical significance (becoming insignificant at the .000 level). Based on these statistical findings, we reject Hypothesis 4.

The squared multiple correlations illustrate that 46% of the variance in the level of the devotion of resources to environmental protection is accounted for by the joint influence of concern for the environment and the concern for economic results. The remaining variance (i.e., 54% in the devotion of resources to environmental protection) cannot be explained by the model.

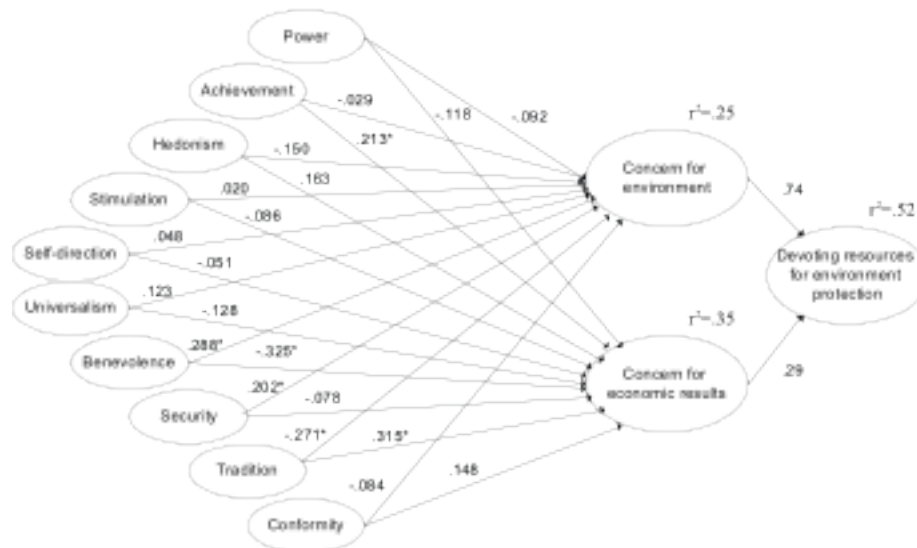
Results about the direct effect of different groups of values on employees' attitudes toward the devotion of resources to environmental protection are outlined in Figure 3.



*Fig. 3:* Standardized direct effect of the group of values on the devotion of resources to environmental protection—employees

Universalism has the strongest direct effect on the devotion of resources for environmental protection for employees. Thus, the significant level of importance of universalism for employees is associated with a greater allocation of resources for environmental protection. The affects of other groups of values (i.e., power, benevolence, security, and tradition) are weaker.

**Business students.** Results about the impact of the personal values groups on students' attitudes toward devoting resources to environment protection, mediated by concern for environment and concern for economic results, are outlined in Figure 4.



*Fig. 4:* The final model of the causal structure for predicting the level of devotion of resources to environmental protection—business students

The strongest effects on the concern for the environment belong to benevolence, tradition, and security, which supports Hypothesis 1. As the importance of benevolence and security increases, so does the concern for the environment. On the other hand, as the importance of tradition increases, the concern for the environment decreases.

The strongest effects on the concern for economic results come from benevolence, tradition, and achievement, which supports Hypothesis 2. As the importance of benevolence increases, the priority of concern for economic results drops. Meanwhile, as the importance of tradition increases, the priority of concern for economic results increases.

The results indicate that concern for the environment and concern for economic results significantly and positively impact the level of devotion of resources to environmental protection ( $\beta = 0.74$ ,  $p < 0.001$  and  $\beta = 0.29$ ,  $p < 0.05$ , respectively). Thus, a higher level of concern for the environment is associated with greater allocation of resources to environmental protection. These findings confirm Hypothesis 3. The association between the concern for economic results and the devotion of resources to the environment is relatively weak, but statistically positive and significant. Thus, we reject Hypothesis 4.

The squared multiple correlations illustrate that 52% of the variance in the issue of the devotion of resources to environmental protection is accounted for by the joint influence of concern for the environment and concern for economic results. The remaining variance (i.e., 48% in the devotion of resources to environmental protection) cannot be explained by the model.

Results about the direct effect of different groups of values on students' attitudes toward the devotion of resources to environmental protection are outlined in Figure 5.



*Fig. 5:* Standardized direct effect of the group of values on the devotion of resources to environmental protection—business students

The direct effects of all groups of values on the devotion of resources to environmental protection are very weak.

## DISCUSSION

This study examined the impact of personal values on employees' and business students' attitudes regarding devoting resources to environmental protection, mediated by concern for environment and concern for economic results. In the last decade, frequently emphasized issues about responsible behavior related to the natural environment have also highlighted the need to understand how people's personal values influence their behavior when deciding about allocating resources for environmental protection (Anderson et al., 2014; Davis et al., 2008; Haq and Alistair, 2011; Peet and Hartwick, 2009). The examination of the student sample contributes to the more comprehensive consideration of the future trends related to the next generation of employees.

Consistent with Hypotheses 1 and 2, the combination of all 10 groups of values for the employees' sample accounted for 44% of the variance in concern for the environment and 49% of the variance in concern for economic results. The values explained 25% and 35% of these variances, respectively, in the business students' sample. A similar investigation by Karp (1996) did not report the percentage of variance in environmental issues that can be explained by the personal values. In addition, Nordlund and Garvill (2002) investigated the model of the influence of values through problem awareness and personal norms, finding that 21% of the variance in pro-environmental behavior was explained by a combination of values.

Our fundamental findings about the positive influence of personal values (i.e., universalism) on the concern for the environment and allocation of resources to environmental protection (i.e., pro-environmental behavior) for both employees and business students are in line with the literature. Such results confirm previous findings—namely, that self-transcendence (i.e., groups of values related to universalism and benevolence) is a positive predictor of pro-environmental behavior (Karp, 1996; Papagiannakis and Lioukas, 2012, 2013; Schultz et al., 2005; Stern and Ditz, 1994).

However, contrary to the expectations, benevolence demonstrated the strongest impact on students' concern for the environment and, consequently, on the allocation of resources to environmental protection. This result is a deviation from the prevailing literature, claiming that universalism is the main predictor of pro-environmental behavior (Karp, 1996) and positive environmental attitudes (Nordlund and Garvill, 2002; Schultz and Zelezny, 1999); both of these ideas were also confirmed in student samples (Karp, 1996; Schultz and Zelezny, 1999). Our results indicate that universalism is the strongest predictor of employees' concern for the environment whereas benevolence is strongest for business students. In other considered studies, benevolence is not mentioned as a significant predictor of environmental attitudes (Schultz and Zelezny, 1999; Stern and Ditz, 1994).

The study results for both samples used in the research indicate that concern for the environment has a very strong and positive impact on people's perceptions of the level of devotion of resources for environmental protection (which confirmed Hypothesis 3). Contrary to the expectations, the concern for economic results showed a positive and weak impact on employees' perception regarding the level of the devotion of resources to environmental protection; for students, the impact is somewhat stronger. The combination of concern for the environment and concern for economic results accounted for 46% of the variance in the level of devotion of resources to environmental protection for employees and 52% for business students. These two predictors have great explanatory power as they explain almost half of the variance, despite the fact that a set of rational and irrational factors influence people's pro-environmental behavior (Axelrod and Lehman, 1993; Dietz et al., 2005; Elm and Radin, 2012; Kimmelmeier et al., 2002;).

Our pattern of results suggests that the impact of personal value on people's attitudes regarding devoting resources to environment protection, mediated by concern for environment and concern for economic results, is stronger than a direct impact of personal values on these attitudes. Furthermore, the impact is stronger for the employee sample. For employees, it is evident that only universalism has a moderate impact, whereas the impact of other groups of values is weaker. For the student sample, benevolence has a very weak impact, yet the impact of other groups of values is even weaker.

Findings regarding the negative association between concern for economic results and concern for the environment, are in line with the general management literature (Buchanan and Huczynski, 2010; Mele, 2012; Mullins, 2010) as well as with Kimmelmeier et al.'s (2002) general findings about the relationship between economic conditions and pro-environmental attitudes. This is, to a greater extent, more valid for the employees than the business students in the current study.

Another important finding of our study is that a larger number of values significantly influence environmental and economic concerns than in studies examining solely the impact of personal values on environmental issues (Mudrack and Mason, 2013; Shafer et al., 2007; Wang and Juslin, 2011).

The results also reveal that the students' attitudes toward devoting resources for environmental protection are more favorable than those of employees. Perceived differences in attitudes of both samples could be mainly attributed to working experiences and the difference between fictive situation (in the student sample) and real situations in business practices (Haq and Alistair, 2011; Wang and Juslin, 2011; Wray-Lake et al., 2010).

The strength of the impact of employees' and students' personal values on attitudes toward devoting resources also reflects the findings in general value research—namely, that the priority of personal values in people's life varies according to their age and life situation (Hofstede, 2001; Ralston et al., 2011; Rokeach, 1973; Schwartz, 2006). Thus, our pattern of results reflects differences in values' priorities between employees and business students.

A comparison of the impact of personal values for the studied samples reveals that more values significantly influence the studied concerns of employees than of students. This pattern of results suggests that concern for the environment, concern for economic results, and the devotion of resources to environmental protection have not yet become significant topics for relatively young students, who have other priorities in their lives, reflecting in their value systems (Karp, 1996; Nedelko, 2011; Ralston et al., 2013;





Rokeach, 1973; Schultz and Zelezny, 1999). The key assumption here is that personal values play a more important role in employees' attitudes related to devoting resources to environmental protection than in the attitudes of future employees.

## POSSIBLE FUTURE DIRECTION AND LIMITATIONS

The results of this study are influenced by several different objectives, including subjective facts and factors. Such objectives include a) examining two samples simultaneously (i.e., employees and business students), b) using SEM when all value groups are simultaneously considered with regard to their influence on concern for the environment and for economic results, and c) using our own measurements for all three latent variables instead of the well-known variables, albeit with a very general new environmental paradigm.



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# Corporate Integrity: The Case of Slovenia

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## *ABSTRACT*

The present article aims to contribute to the discussion on corporate governance, corporate integrity and business ethics. The article advocates the argument that a company in its functioning has to satisfy not only the legal requirements but moral and ethical principles as well in order to achieve the status of credible partner with the high level of integrity. The case study research is applied to show an example of unethical behavior of a company and to question its integrity. The article shows that the responsibility of corporate integrity and business ethics is on the side of the company's key stakeholders, which are owners and management.

*Key words: Corporate governance, corporate integrity, business ethics, case study*

## INTRODUCTION

The last economic crises from 2008 brought, in addition to all unethical behavior, also a chance to reflect about the good corporate governance. Legal and ethical scandals of Enron, WorldCom, Tico and many other companies, initiated a wave of mistrust. During discussions about finding the way out from occurred situation, initiations about doing business on different foundations, have taken place.

Therefore (re)cognition, that the principles of corporate integrity are essential part of governance and management today, is not surprising. Companies with high level of corporate integrity have become more successful showing better business results (see Belak Ja. et al, 2014; Bleicher, 1994 and Rüeg-Stürm, 2002).

The research question which we address in our research is How the concept of corporate integrity is implemented in the practice? Why certain companies fail to address corporate integrity in a comprehensive way?

The purpose of this study is to broaden our understanding of the concept of corporate integrity and its applicability in the practice. The cognitions presented in this paper can be useful in the development of a theory of corporate integrity. The findings derive from in-depth case of corporate integrity of a construction company in Slovenia where the negative experience of a buyer questioned the corporate integrity of that company. A single-case study has been conducted that enables »analytical generalization« in which »a previously developed theory is used as a template with which to compare the empirical results of the case study« (Yin, 2003, p. 32-33).

The paper is structured as follows. First we present the theoretical framework about the corporate integrity focused on the principles involving relations between companies and customers. We illustrate The Slovenian guidelines of corporate integrity, which have been adopted by 29 identifiable companies till now. The main research work is concentrated on a case study which refers to contractual relationship between a company and a customer during legal analysis of observed relation and its assessment of conformity with ethical principles. Through our findings we establish whether the acting of the company was in accordance with the guidelines of corporate integrity or not.

## THEORETICAL FRAMEWORK

### THE CONCEPT OF CORPORATE INTEGRITY AND SLOVENIAN GUIDELINES OF CORPORATE INTEGRITY

The concept »corporate integrity« in the most general and the broadest way should be defined as compliance of business companies. Business of companies will be in compliance only in the case, when it is consistent with legislation, other rules, current recommendations, internal regulations, good business practices and ethical principles (SSKI, 2014, p. 2).

Efforts to implement the principles of corporate integrity are also alive in Slovenia. They reached the pinnacle on January 2014, when on the basis of cooperation between Chamber of Commerce of Slovenia, Managers' Association of Slovenia, Slovenian



Directors' Association and Economic Faculty University of Ljubljana, under the honorary patronage of the president of the Republic of Slovenia Mr. Borut Pahor, incurred the Slovenian guidelines of corporate integrity. The purpose of creators was to offer to companies in Slovenia opportunity to systematic exercise the principles of corporate integrity into their business. In the formulation of Slovenian guidelines they derived from Codes of conduct, Slovenian and international regulations on corporate integrity particularly emphasized the OECD Good Practice Guidance on Internal Controls, Ethics, and Compliance (2009). Till today 29 presidents of the boards, members of the boards or directors – the Ambassadors of corporate integrity, by signing the Slovenian guidelines in public, committed that companies which they lead, will respect and follow to the principles, incorporated into the Slovenian guidelines of corporate integrity.

Slovenian guidelines of corporate integrity establish the mechanism for creating the system of corporate integrity in the following steps:

- Management and supervisory boards' commitment in respect to the principles of corporate integrity,
- Establishment of control environment with determination of representative for corporate integrity and procedures of internal controls,
- Establishment of the mechanism for risk identification and management of corporate integrity,
- Creating a system of professional training and education on corporate integrity and cooperation between management and supervisory boards.

In this paper we therefore advocate the premise that the long term existence and success of a company strongly depends on the company's credibility and its integrity. We argue that the company's owners and top management are the carriers (and institutionally responsible) of company's ethical and credible behavior and consequently the carriers of corporate integrity on the basis of different and several European and world's models of management and governance. A company's ethical behavior and its integrity can be achieved only by "complete organizational conversion" (Thommen, 2003), which has to take place at all process levels (Belak et al., 2003) of the company's management and governance (the political level, as well as the strategic and operational management levels). Also in Kajzer's opinion (1994, 1997, 2003), the idea of credible company and company's integrity strongly depends on a company's key stakeholders – owners and top management. According to the author, the idea of such company embraces the activities of credibility and integrity initiation in a company's vision, policy (mission), strategy, and finally in the processes and structures needed for the realization of this idea of credible company or a company with integrity.

It is then at the strategic level of the management process that the strategies and the strategic allocation of resources needed for achieving the goal of making a company credible and achieving its integrity take place. For this, the company's top management holds the main responsibility.

For success of the ethics program implementation for achieving the company's integrity, it is important that it is internalized by all workers, groups, and at all company's management and governance levels. We have shown that integrity, credibility and ethical behavior of a company can be achieved only through holistic enterprise transformation and should be implemented from top to bottom, starting with the owners' values that influence company's vision and policy (see also Thommen, 2003; Belak et al., 2014), and ending at the fundamental (basic) – realization process.



## INSTITUTIONAL DIMENSIONS OF CORPORATE INTEGRITY

The initiators of corporate integrity are in particular management and supervisory boards, officers, employees, and, where appropriate, other stakeholders of the company (e.g. business partners, agents, consultants, representatives, distributors, contractors and suppliers).

Companies should consider ethics and compliance programmes and inform business partners of the company's commitment to abiding the principles of corporate integrity, seeking a reciprocal commitment from them. In contractual arrangements with business partners companies should develop measures (informal as well as formal measures) for implementing the principles of corporate integrity including properly documented risk-based due diligence pertaining to the hiring, as well as the appropriate and regular oversight of business partners (SSKI, 2014, p. 5). Below we argue the role of a company's management and supervisory bodies as well as corporate integrity officers by ensuring and fostering the corporate integrity.

### *Role of management and supervisory bodies*

The commitments made by the management and supervisory bodies of a company to respect and apply the corporate integrity principles constitute the initial step towards the establishment of a corporate integrity system. Formally, their commitments are integrated into the strategic and operational documents of a company and are in fact present in its day-to-day operations.

In addition to their own commitment to integrity, they will also call upon other stakeholders in a company to respect the corporate integrity principles, namely the employees as well as representatives and business partners. The responsibilities arising out of the commitment include adopting the legal compliance code, designing a programme for positive motivation of employees, integrating the anti-corruption clauses into the agreements with business partners and setting up a system of sanctions that defines the breaches of discipline, the procedure for handling them and appropriate sanctions for the employees at all levels of the company, breaching the corporate integrity.

On the basis of the commitment to corporate integrity, the management body is obliged to adopt the rules for the implementation of procedures for initial and periodical verifications of appropriateness and adequacy of managers. Furthermore, it is obliged to produce a report on the state of corporate integrity in the company, include it into the annual report and formulate, together with other stakeholders, the indicators for reporting and monitoring progress in this area.

### *Role and responsibilities of corporate integrity officer*

In agreement with the supervisory body, the management body appoints one or more corporate integrity officers or sets up a separate department to this end.

The corporate integrity officer is in charge of setting up a mechanism of internal reporting and protection of all who report the breaches of corporate integrity. Moreover, an efficient system, responsive to the whistle-blowers' reports should be put in place, taking care of the protection of their identity. The corporate integrity officer must report on a continuous basis to the management body and to the supervisory body, if necessary, on any identified and rectified irregularities.



## ATTITUDE TO THE CUSTOMERS

The focus of our research was the relationship of the company towards its customer therefore in our paper we deal with this perspective of corporate integrity. The corporate integrity system concerns in an integrative way all the key areas in a company. It involves the relations between the company and its employees, between the company and its business partners and the company and its competitors. Any company's vision, policy, strategies or legal compliance codes include the corporate integrity principles, specifically emphasising the company's attitude towards its customers and regulating the basic principles for managing the relationships between the company and the customers. This argumentation is supported also by MER model of integral management and governance, which argues that a company's credibility and corporate integrity should be manifested in certain company's relationship towards all company's stakeholders (Belak Ja. et al., 2014).

We have chosen some codes of conduct of certain companies to find out how they treat relations with customers.

### Code of Conduct Telekom/Austria Group, Austria

»The image of the Telekom Austria Group is strongly formed by the way we interact with our customers. We obey the law and treat our customers as we ourselves would like to be treated« (Code of Conduct, p. 20).

### Code of Conduct at Gorenje Group, Slovenia

»Customer satisfaction is an overriding concern of the Company. Safe, high quality products and services, fair pricing and appropriate after-sales service define the Company's relations with its customers. The Company always seeks to deliver on its promises and business commitments and covenants« (Code of Conduct, p.7.).

### Code of ethics Luka Koper Group, Slovenia

»The company endeavours to develop good relations with its customers, suppliers and other *stakeholders on the basis of mutual confidence. In mutual relations good business practice shall be respected.* The company's fundamental principle is customer satisfaction« (Code of ethics, 2012, p.3.).

According to shown examples is possible to determine that companies are aware how important factor of business are customers. Although the customers are primary protected by other areas of law rules (primarily law of obligations and consumer protection law), companies wish in own codes noted to good attitude to customers. By the inclusion of relation to customers into the codes of conduct as one of the most important parts of the corporate integrity system, show that they are willing to guarantee an adequate level of legal protection.

## THE CASE STUDY

### RESEARCH METHOD

The impetus for this study was an unique opportunity. The individual who is a researcher (in cont.: Researcher) had experienced considerable problems with the constructor of Researcher's house. The Researcher approached her colleagues at the faculty. At first the Researcher looked only for a legal advice, but discussions latter on with some other colleagues led to identification of several issues within the problem. During the process of solving the problem the Slovenian guidelines of corporate integrity were signed in Slovenia. As a research worker the Researcher knew that the problem dealt with would be an excellent opportunity for a study of corporate integrity. With this in mind, the Researcher approached a group of colleagues and invited them to do the research.

The decision was made to apply a qualitative research method which is a suitable approach when social and cultural aspects of organizations are studied and when we "want to study a particular subject in-depth" (Myers, 2013, p. 9). Among different qualitative research methods the case study research methodology was selected where an important part of a case study design is a selection of a specific type of case study (e.g., Yin, 2003). Since we found our case as an extreme case showing that corporate integrity is a relevant phenomenon, we decided to apply a single descriptive case study (e.g., De Masis, Kotlar, 2014; Yin, 2003)

### DATA COLLECTION AND ANALYSIS

Data collection started with in-depth interview with the Researcher, owner of the house (in continuation referred as a Customer) which explained what happened.

In the year 2003 the Customer signed a contract with the Company X for building a prefabricated house as an extension of the existent house. In May 2014 the Costumer discovered that shingles on the roof of the prefabricated house were considerably damaged. The Customer contacted the supplier of shingles (the Company Y) with a question on how it was possible that shingles were that damaged in just a time period of 10 years. A representative of the Company Y came to the Customer in May 2014 and examined the roof. He wrote a report on the results of his examination. The major finding of his examination was that shingles on the roof of the Customer's house were not those that were agreed upon in the contract and paid by the Customer. The Customer decided to request the replacement of shingles. The Customer wrote a request and sent it to the Company X. The responsible person of the Company X's department for claims responded shortly in a formal letter that all terms for claim expired. The Customer was not satisfied with such answer and proposed a meeting with responsible persons at the Company X. On the date of the meeting the Customer received a phone call from the responsible person of the Company X's department for claims explaining that they did not have time and see no reasons for discussing the issue with the Customer.

Several interviews were conducted with the Customer after this initial in-depth interview in order to collect additional information. Besides interviews we gathered and studied written documents such as the contract between the Customer and the Company X, written documentation on communication between the Customer and the Company X (i.e., letters). Data were also collected from the Company's X websites and newspaper clippings and articles appearing in the mass media. Triangulation of data by using multiple sources of data (i.e., interview data, documentation) is in opinion of several authors (e.g., Creswell, 2013; Myers, 2013) a suitable way for gaining more comprehensive picture of the researched phenomena as well as enhances data credibility (e.g., De Masis, Kotlar, 2014). Interviews and data collection were done in the time period between September 2014 and February 2015.



Data collection and analysis were guided by the research question and were done several times concurrently that is often the case in qualitative research (e.g., Creswell, 2013). When analyzing the case we used the theoretical framework created from existing literature where two major area of investigation have been identified, and that are: legal and ethical interpretation. For the purposes of our research bellow we are presenting the legal and ethical analysis of our case study.

## FINDINGS

### Legal analysis

It is apparent from the description of the facts that a construction contract concerning an extension to a residential house was signed between the company (the contractor) and the client (i.e., Customer). The construction contract was executed with both parties fulfilling the obligations undertaken. Eleven years after the completion of the work, however, it became apparent that the contractor failed to fulfil the contractual obligation by installing a different roof covering, without previously notifying the client or reaching an agreement with him. The client was informed of the fact when after barely eleven years the roof covering was destroyed to the extent that it had to be replaced by a new one.

The above described improper performance of the contract may be defined as construction with a defect. The contractors' liability for material defects is a contractual obligation according to which the contractor, who constructed a building with defects, is obliged to eliminate negative effects of such defects and the client has the right to require the elimination of negative effects. The client exercises this right through an action to enforce a guarantee and through compensation claims.

### *Civil tort*

In the present case, the contractor's liability for the defect may be founded on two legal bases:

- As general liability for defects in a structure (Art. 633– 640 of the Code of Obligations - OZ), and
- As special type of liability for defects in the execution of the structure concerning its solidity (Art. 662 of the OZ).

It is possible to speak of a defect in a structure when the properties of a built structure fail to comply with the contractually agreed properties and the rules of the construction profession, as it follows by analogy from paragraph 1 of Article 626 of the OZ. It is apparent from the general rules concerning the liabilities for material defects that a contractor is responsible for both the material and legal defects of a structure. In the present case, material defects appeared in the building and therefore, the discussion of legal defects will not be included in this paper.

Special rules on liability concerning the solidity of the structure do not apply to all defects in a structure (unlike the general liability for defects in a structure) but only to the defects in parts of the structure allowing its normal use. Other than the defects in constructional parts of the structure, jeopardizing its stability, the defects concerning the solidity of construction also include other defects due to which the stability of the structure is not at risk, but they prevent or substantially hamper the normal functioning of the structure (e.g. defects on the roof or façade elements causing rainwater penetration into the structure) (Plavšak, 2004).

The contractors' behavior may also be defined as a liability for damages, or more specifically, contractual liability, considering that due to the contractor's breach of contractual obligation the damage was caused to the client, resulting in a reduced value of the structure with a defect. Given that the liability for defects is a special type of contractual liability for damages, the relevant claims are already covered by the claims related to the contractor's liability for defects.

### ***Criminal offence***

The contractor's behavior may also be defined as business fraud in accordance with Art. 228 of the Criminal Code (KZ-1).

Pursuant to Art. 228 of the KZ-1, business fraud is a special type of fraud that can only be committed in the performance of an economic activity. A perpetrator of this criminal offence does not necessarily have a fraudulent intent from the very beginning, i.e. since the conclusion of the business; performance of an act is also possible during its implementation. The perpetrator performs an act by deceiving the other person (resulting in misrepresentation of specific circumstances by the other person) or leaving the other person in the wrong as regards the existence or non-existence of specific circumstances. A criminal offence is completed, when a party or anyone else incurs pecuniary loss (unlawful consequence). The occurrence of the damage must always be conditional upon the act of the perpetrator, which means that a causal link should be established between the perpetrator's fraudulent practice and the occurrence of the damage (Judgment of the Supreme Court of Slovenia, No. I Ips 361/2004 of 2 June 2005).

The legally protected value in this criminal offence is economic activity, whereas the legally protected good is the principle of trust in legal transactions (Selinšek, 2006).

Behavior either refers to active behavior – creating misrepresentation by the other party, or passive behavior – leaving the other party in the wrong and it has to be complemented by obtaining material benefit or by the occurrence of material loss for the party or for anybody else.

The perpetrator commits an act with intent, direct or possible intent that has to be present when concluding or implementing a contract.

Business fraud is punishable by a prison sentence of up to five years and from one to ten years for a qualified form of offence if substantial material loss has occurred. Pursuant to the KZ-1, substantial material loss refers to a loss exceeding EUR 50,000 (Art. 99/9 of the KZ-1).

### **Ethical analysis**

It is important to emphasize that ethical behavior of a company and its integrity can be fostered and achieved through so called informal and formal measures of business ethics implementation (see also the cognitions of the MER Model of Management and governance – Belak et al., 2014 and other as Murphy, 1995, 1998; Trevino et al., 1990, 1992, 1999, 2000; Laufer, Robertson, 1997). The formal measures of business ethics implementation define several criteria for an effective compliance and business ethics program (Laczniaik, Roberson, 1999; Morris, 2002; Thommen, 2003): a statement of enterprise's core values, a compliance manual, a code of conduct or code of ethics, a mission statement, anonymous hotlines, job descriptions, selection of employees, training in ethics, evaluation of ethical behavior, an ethics committee, an ethics audit, sanctions for ethics abuse, ethics standards and indexes, policy manuals for ethical issues, an ethics consulting service, an ombudsman and ethic advocate, and a manager responsible for ethical issues. These elements are indispensable when communicating moral expectations within the enterprise.

The elements of informal measures on the other hand include informal norms, heroes and role models, rituals, stories, and the specific language used and define important parts of the informal culture. Core values, enterprise culture and climate, on the other hand, are part of both structures and represent the starting point of the model of business ethics implementation. Maister (2007) supports the importance of consistency between mission, vision, enterprise values, and culture.

The actions of every company affect other companies, as well as many people internally and externally. In the context of understanding business ethics, it has to be stressed that ethical relationships are present at the individual, organisational, and social levels (Staffelbach, 1994). Thommen (2003) named them micro, mezzo, and macro levels. According to both authors, business ethics is carried out at the organisational (mezzo) level.



At the micro level, the actions of an individual are observed and examined. The subject of research at this level is the functioning of an individual in his specific living environment and at his place of work, and the circumstances that limit his functioning in such a living environment (e.g. working conditions). The purpose is to describe what the individual's behavior ought to be in case of an employer, manager, and end user. At this level the possible behavior of an individual in particular conditions and circumstances is examined (e.g. the possible behavior of a co-worker who is concerned with the safety of a certain product when his superiors do not consider his arguments to be relevant).

At the mezzo level, the functioning of a company is examined and observed. The company consists of individuals who shape and form a certain entity or organisation. However, such company represents an economic unit; therefore, it should be considered as an independent functioning subject. As such it is responsible for its moral behavior and actions. It should also carry the burden as well as the consequences of its actions. Besides being a legal entity, the company is also a moral entity, which means that in the case of e.g. ecological catastrophe the particular co-workers should be called on to take responsibility for their incorrect actions or wrong decisions. Besides the legal responsibility, the company also has the moral responsibility for wrong actions. Therefore in the case of unethical behavior, it should not only accept the legally assigned penalty, but take other measures and responsibilities as well.

At the macro level, general economic conditions are shaped. At this level, questions regarding the best economic system for the functioning of different organisations such as companies, legal entities, consumer associations, etc. are established. In addition, this level considers questions such as to what extent the market economy can satisfy ethical principles, what is the most righteous economic policy, or how to set effective ecological and energy policy.

In this article we examine the ethics at the level of organization (mezzo level). At this point it should be stressed out that the company's stakeholders are due to their different interests considered as the constitutive elements of the business ethics at all levels. However, the examination of business ethics at the mezzo level solely is almost impossible since all three levels of business ethics are tightly connected to each other and they also depend on each other.

The above argumentation is clearly showed and proved also through our case study. The observed company on one side follows the regulations concerning the rights and obligations of the customer (i.e., the Customer) as well as of the seller (i.e., the Company X), which says that the time of the possible customer's complaints has passed already, therefore taking into account the legal frames of the customer's complaint the company has no responsibilities for the quality of the materials and/or services after the expiration of that time – in this case we are taking into account the business ethics at macro level where the legislation and legal questions are in focus. On the other hand, however, it is of essential meaning for the company's long term existence and success to gain trust and the integrity in the environment where this company functions. Therefore it should be of company's great interest to find out (even after the expiration of the guarantees) what in the company's relationship with the customer went wrong. Our case study research shows that the observed company refused even any dialog concerning the described issues after the company realized that all legal notices has expired. After the dialog on the described issues and problems the observed company should carry out the internal audit, which would show that the wrong materials were build in the customer's house and consequently the customer's house is not of the quality that was guaranteed with the legally signed contracts and documents. This way we come to the conclusion that even though the observed company may satisfy the macro level of the business ethics the company's behavior can be treated as unethical behavior taking into account the micro and mezzo level of the business ethics. The observed company did not take over any of the responsibility of its actions that would foster the clarification of the described issues. Rather, the observed company is hiding behind the legal frame of the business ethics then to approach the customer in order to act responsible and credible – in accordance with its integrity. Considering the above stated theoretical cognitions we can argue that the examined company would be more successful in implementing its credibility and integrity if it would develop and implement additional informal and formal measures of credibility and integrity implementation (e.g. core values with ethical content, representative for corporate integrity, etc. - see ch. 2.1 and 2.2 of this contribution).





## DISCUSSION AND CONCLUSIONS

In the event of a construction with a defect, the client has, according to the Slovenian law, the right to actions to enforce a guarantee. The actions to enforce a guarantee mainly refer to the elimination of the defect. If the elimination of the defect incurred excessive costs the client may elect to request a reduction of the payment or a withdrawal from the contract. Furthermore, the actions to enforce a guarantee include the right of the client to compensation (a compensation claim) that may be exercised simultaneously with the actions to enforce a guarantee.

The action to enforce a guarantee regarding the general liability for defects is subject to a two-year, and for a special type of liability for defects in the execution of the structure concerning its solidity to a ten-year time-limit (Art. 634/2 and 662/1 of the OZ).

The client has the right to lodge a complaint with the law enforcement authorities about the business fraud. If the time interval from the date of the commitment of the underlying criminal offence, i.e. business fraud, exceeds ten years, criminal prosecution is no longer permitted due to the statute of limitation. The statute of limitation is twenty years for a qualified form (Art. 90/1 of the KZ-1).

In view of the above indicated provisions, it can be established that in the present case the client may no longer take actions to enforce a guarantee due to the expiry of the two- and ten-year statutory time periods since the completion of the work, during which the contractor is liable for defects and the solidity of the structure.

Moreover, it may be concluded that the criminal prosecution of the business fraud is statute-barred. Criminal prosecution would still be possible if the damage caused to the client due to the contractor's failure to fulfil the obligation exceeded EUR 50,000.

The results of the legal analysis of the presented case study show that the client has exhausted all legal remedies to request the elimination of defects on the structure from the contractor, as the statutory deadlines for the enforcement have expired and the criminal prosecution due to the business fraud is already statute-barred. However, if we take into account various models of integral management and governance, we can state that the company would have to take such actions which would lead towards the clarification and rehabilitation of the occurred (ethical) conflict. We can therefore argue that in order to achieve its long-term existence and success a company has to follow and obey ethical principles not only the legal ones. Only this way the company would be able to achieve the status of credible partner with the highest level of integrity.





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# Technology Research, Knowledge, and Innovation Impact on Company Success and Quality of Life

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## *ABSTRACT*

This research contributes a new model “Company success and quality of life by the indicators of technology research, innovation, and knowledge” (CSQL-TRIK). It concentrates on technology research, innovation, and knowledge indicators and their influence on company success and quality of life in the Republic of Slovenia. The main purpose of the study is to conceptualize and empirically verify individual variables based on the company success and quality of life, using a sample of businesses. Based on the regression analysis, the research results show that technology research, innovation, and knowledge (the reestablishment of scientists’ collaboration with the businesses) positively impact company’s success. Innovation (innovative process (innovative products/services and marketing of innovative products/services)) and knowledge (the reestablishment of scientists’ collaboration with the businesses) positively affect social and economic aspects of quality of life.

*Keywords:* Company success, economic growth, innovation, knowledge, technology research, quality of life.

## INTRODUCTION

Modern economics is at an important turning point of its paradigm. The European Commission (EC) recommends reforms in the measurement of economic growth (Stiglitz 2009). Gross domestic product (GDP) tells a lot about the extent of market operations, but excludes conservation of natural living conditions in the present civilization, or the effects of businesses on people, especially their quality of life (QL) and happiness, on the social responsibility of governments, businesses, and people to both people and nature. Technology research (TR) should contribute to the invention, innovation diffusion process (IIDP) as one of the sources of people's QL and happiness, even by supporting economic growth and development, without destroying the people's natural conditions for living—at least not as much as in the last two centuries.

We start with the motion for a resolution of the European Parliament (2011) on the “GDP and beyond, measuring progress in a world that has changed”. Also EESO (2012), European Union (2010), Stiglitz, Sen and Fitoussi (2009), Costanza, Hart, Posner and Talberth (2009) and OECD (2011) work toward the same future goal as the EU, thereby defining indicators that are crucial for the creation of a new growth model to achieve a high QL of all European citizens.

One must take into account the broader aspects of QL, which requires including in the models at the micro-economic levels, of indicators and variables that accurately measure progress toward the objectives of economic, environmental, and social perspectives of QL in the long run.

Basic, requisitely holistic sustainable education at all school levels and the associated revised hierarchy of values, and the integrated indicators measuring humans' and ecosystems' QL (in addition to GDP) are indispensable building blocks for the implementation of a sustainable paradigm. Economic growth does not improve the QL, but the availability of public goods, services such as education, infrastructures, public health, and ecosystem services does. Humans need a concept and method for optimal economic and social development, multi-layered QL, and QL that is not based on continuous economic growth (Costanza, Farley & Kubiszewski 2010; Plut 2010).

One must fill in the gaps between economic and social processes as results of political decisions as well as greater prosperity and social progress. The indicators that complement GDP and include environmental sustainability can reflect the economic and social development (EESO 2012).

The next chapter reviews the literature of the specific fields of TR, innovation, knowledge, QL, and economic growth. Chapter 3 is devoted to the applied methodology and data gathering in the Republic of Slovenia (RS). Fourth chapter verifies hypotheses using a regression analysis. After testing the hypotheses, new model CSQL-TRIK is presented in the fifth chapter. Conclusion and future research are provided in the last chapter of the paper.



## LITERATURE ON TR, KNOWLEDGE, AND INNOVATION' IMPACT ON THE ECONOMIC GROWTH AND QL

QL is defined by the growth of GDP per capita; in the 1970s, the first collected data on basic human needs were collected. New criteria for measuring QL have been identified since the 1990s, when the aggregate indicator of human development was developed (Nussbaum & Sen 1995). Due to the rise of neoliberal capitalism, they were pushed into the background. In order to measure QL, a country needs additional economic indicators that show the status and development of the individual companies.

The OECD's (2011) index of a better life (the key dimensions of QL) defines the material living conditions (housing, income and labor) and QL (social inclusion, education, environment, governance, health, life satisfaction, safety, and reconciliation of work and private life). Measuring QL and progress in society is one of the key priorities at the national level and in the international environment. For statistical systems, this is a particular challenge, because the prosperity is a complex and multidimensional phenomenon (Vrabic Kek 2012: 3). More and more researchers have sought to answer the question as to whether the social goal of raising the GDP, regardless of other costs (excluding environmental costs) or the satisfaction of people, makes sense (Hanzek, Omladič & Tome, 2010; Mulej 2009; Stiglitz 2009; Hanzek 2010; Suvorov, Rutar & Zitnik 2010; Vintar Mally 2010).

In the current rapidly changing society, QL requires appropriate new approaches (Hicks 2012). Subjective QL measurements should complement the existing objective measures and various social indicators (Sacks, Stevenson & Wolfers 2010), but this is not without limits: Non-economic factors are more important than economic factors (Milfelner, Potocnik & Šarotar Žižek 2014). The GDP is the most commonly used indicator of economic development. Higher growth leads to higher spending, which means better-met needs. It follows that economic growth increases human satisfaction. Yet this is not necessarily true (Cassiers 2011; Sarotar Zizek 2012). One must replace GDP and other financial indicators, which have thus far provided the key objective measurement of economic activity with health, social, and economic QL and ecological integrity indicators.

The European Research Advisory Board recommended the invigoration of the European knowledge triangle (education, research and innovation) through the Structural Funds' "Energising Europe's Knowledge Triangle of Research, Education and Innovation through the Structural Funds". Research, knowledge, and innovation as well as the European knowledge triangle are based on the achievement of these objectives (Council of the European Union in 2007: 7; Council of the European Union in 2008: 9). Innovation is officially and theoretically recognized as a key to growth and competitiveness, because it is the basis for IIDP and innovation of all contents. The genuine education of citizens is one of the leading European innovation strategies. The European Institute of Technology has sought to assemble the three leading factors of the knowledge triangle, which includes a higher level of education, research, and business innovation at the national government level. In light of the increasing capacity due to the increasing European education and, consequently, the results of research in a clearly defined marketing opportunity, the innovative European Institute of Technology has built a bridge across the gap with the EU's international competitors (European Commission 2008). Costa et al. (2008: 324) found a strong correlation between science and technology and the GDP. Economic growth depends on scientific and technological resources. In order to cover the entire innovation process, one must measure and reflect new forms of innovation and develop new indicators to measure open innovation and innovation, instead of research and development (Arundel, Catalina & Minna 2008).

The question remains: What areas of TR, innovation, and knowledge affect the success of companies, and thus economic growth, to improve the basis of QL, and how can we measure them? Therefore, we defined economic growth as company success on microeconomic level of the RS and developed the following hypotheses:

Hypothesis H1: Technology research has a positive effect on the company success in the RS.

Hypothesis H<sub>2</sub>: Innovation has a positive effect on the on the company success in the RS.

Hypothesis H<sub>3</sub>: Knowledge has a positive effect on the company success in the RS.

Hypothesis H<sub>4</sub>: Technology research, innovation, and knowledge have a positive effect on quality of life in the RS.

## METHODOLOGY AND DATA GATHERING

The research is based on the quantitative methodology. In designing the sample at the micro-economic level, the sample was limited by the size of the company's population (ZGD 2006). Units of the sample were spread out based on random sampling. The analysis included 1.430 respondents or employees in companies of RS. One employee filled data for one company. The process of obtaining the selection of the sample included respondents from companies in the business register of the RS, AJPES data base iBON 2012 (AJPES 2012). The questionnaire was posted on the website: <http://www.ika>. Data collection took place in June and July 2013, by email. The questionnaire contains a combination of closed questions with Likert type rating scale (1-7). Interval scale for measuring the value of the observed variables has 7 equal size intervals. Scale questionnaire covers the following answers and statements: 1 = strongly disagree, 2 = disagree, 3 = slightly disagree, 4 = neither agree nor disagree, 5 = slightly agree, 6 = strongly agree and 7 = totally agree. We empirically verified individual variables based on the QL and company success with a sample of 288 companies at the micro-economic level of the RS. We surveyed employees in the company. Based on the TR, innovation, knowledge, company success, and QL we developed indicators and variables created in accordance with the questionnaire. The first set of questionnaire is related to TR, the second set is related to innovation and divided into 1) government mechanisms and cooperation with the business and 2) innovative processes (products/services and marketing of innovative products/services). The third set relates to knowledge, which is divided into 1) the reestablishment of scientists' collaboration with business, and 2) obstacles for the reestablishment of scientists' collaboration with the businesses. The fourth set relates to success in the last two years for the company in which the respondent is employed. The last and fifth set of questions relates to the QL and is based on employees' own household. The fifth part of the questionnaire was divided into non-economic, economic, and environmental aspects of QL. Non-economic aspects of QL were defined by indicators of satisfaction (subjective feelings of happiness, life satisfaction, trust people, trust in institutions, etc.) and the satisfaction with life as a whole, the economic aspect of QL, and the individual's material situation. The environment was defined as the use and quality of natural resources.

Variables of TR were defined by the survey of Cigler, Drnovsek, Luksic, Orbanic, Peperko, Potocnik & Sterle (2008) »Analysis of the transfer of knowledge into the economy by scientific research areas«. Definitions of variables were developed with arguments on the promotion of activities using resources in the context of calls EK and specific programs in the field of TR, innovation and knowledge (investment in R&D, support for research programs with funds to support the development of regional innovation strategies, development and internationalization of involvement in international research, awareness with EK calls and check on current calls and use of co-financing).

Variables Innovation (government mechanisms and cooperation with the business) were also defined by the survey performed by Cigler, Drnovsek, Luksic, Orbanic, Peperko, Potocnik & Sterle (2008): Cooperation with universities. Progress in technology, competition (knowledge and ideas). Co-financing with the help of a supportive business environment. The internationalization of enterprises and new investments, linking businesses and the development of clusters in Slovenia. Introducing strategies to increase productivity. Organization supportive environment RS. International research and development programs and projects.





Tax incentives for investment in research and development. Participation in the research, which was ordered by the economy. Co-financing employment costs of researchers, who switched from academia to industry.

Variables of Innovation (innovative process (innovative products/services and marketing of innovative products/services)) were defined by the survey of Bucar (2012), also see Table 5.

Variables of Knowledge (obstacles for the reestablishment of scientists' collaboration with the businesses) were defined by the research project (Pezdir 2004) »Mechanisms and measures for the transfer of knowledge from the academic and research community in the light of new innovation paradigm (state and development trends in Slovenia compared to the developed countries of the EU) - Technological cooperation between science and industry«.

The second part of variables Knowledge (the reestablishment of scientists' collaboration with the businesses) was defined by several research institutes and researches (Pezdir 2004; Etzkowitz 2002 in OECD 2000). It is about collaboration between academia and industry: establishing contacts with industry, cooperation projects, failure to projects in cooperation with industry - under specific conditions (financial aspect) - failure to projects in cooperation with industry - under specific conditions (attraction, theme) - as well as obstacles to the establishment of cooperation between academia and industry on the side of the economy (general lack of interest in research and development, the inability of the economy to use the results of joint research and development projects, uncertain funding for all phases of the project, the lack of resources in the economy for cooperation), on the side of RS (unclear state policy in the field of research, excessive focus countries in financing basic research) and by research institutes and universities (habilitation rules that do not motivate cooperation with the economy, the lack of research that would meet the specific needs of projects for the economy, the lack of interoperability between the different institutes and faculties on the basis of which it would be better to cooperate with the economy, administrative obstacles to the mobility of teaching employment (the college) and research (the Institute) and the lack of administrative support to the college or. institute) (Pezdir 2004; Etzkowitz 2002; Polt, Rammer, Scharfetter, Gassler & Schibany 2001; Howells, Nadeva & Georghiou 1998).

Variables of company success were defined by balanced scorecard (Kaplan in Norton 2000): Increased profit on investment funds. Increased realized investments. Increased value on the market. Increased added value per employee. Increased average number of employees. Increased net revenue from sales. Accessible financial resources. Increased percentage of capital. Increased exports of goods and services. Increased sales.

Variables of quality of life were divided on the economic (material), non-economic (satisfaction, safety, happiness, health) and environmental aspects (producing agricultural products for the purpose of own household and importance to protecting the environment, and concern about the environment) of quality of life (Apohal Vuckovic, Kajzer, Celebic & Ferik 2010, Stiglitz 2009, Suvorov, Rutar & Zitnik 2010, Murn 2010).

## DATA ANALYSIS

A statistical analysis was performed using the Statistical Package for the Social Sciences (SPSS, version 19.0). The research sought to verify hypotheses H<sub>1</sub>, H<sub>2</sub>, H<sub>3</sub>, and H<sub>4</sub> using a regression analysis to determine the influence of TR, innovation, and knowledge on the success of companies and QL in the RS.

First, we defined variables for the factor analysis because we wanted to explain the maximum of variability. The condition for the factor analysis and the determination of the factors involved verifying the correlation between sets of dependent variables.



Before carrying out a factor analysis, we examined the suitability of the information for using this method. In the first step, we used Bartlett's test of sphericity and verified the correlation among variables in accordance with the level of significance of less than 0.05. We then conducted the KMO (Keiser–Meyer–Olkin Measure of Sampling Adequacy) test and measured data for factor analysis. The KMO measure value, in the present case, was greater than 0.8, indicating optimal suitability of data for the factor analysis. In the next step, we conducted the factor analysis using the Principal axis factoring (PAF) method, which is widely used in factor analysis. The basic principle of the PAF method is to maximize the variance of the common factor, but based on an estimate of the variances which determine the number of factors (Field 2005). In PAF (Warner 2007: 785), the analysis of the data structure focused on shared variance and not on sources of error that are unique to individual measurements. For some datasets, Maximum likelihood method and PAF might yield similar results about the number and nature of components or factors. For many applications of factor analysis in the behavioral and social sciences, the conceptual approach involved in PAF (i.e., trying to understand the shared variance in a set of  $x$  measurements through a small set of latent variables called factors) might be more convenient than the mathematically simpler Maximum likelihood method approach (which sets out to represent all of the variances in the  $x$  variables through a small set of components).

We applied PAF in two steps (Rasic 2015: 109-127)<sup>1</sup>. First, we determined the PAF method for assessing the communalities and then the Varimax rotation of the factor weights. Based on the results of the factor analysis, limits for the inclusion of variables in the factor model were determined at the value of communalities 0.40 (Field 2005: 631). We excluded from the model any variables in which less than 40 % of the variance is included. For easier factor interpretation, we made right angles in the matrix of factor weights after applying the Varimax method, where the rotated factors were independent from each other. When we saved factor scores in the SPSS program, we identified new variables. When verifying the hypothesis of regression, we also met the criterion that the independent variables are not correlated. Factor scores were saved as a new variable, which is a standardized normally distributed one and was used as a variable to test the hypotheses developed in the second chapter.

## EFFECT OF TECHNOLOGY RESEARCH ON ECONOMIC GROWTH

Hypothesis H<sub>1</sub>: TR has a positive effect on the company success in the RS. Results of regression analysis<sup>2</sup> (Table 1) showed that the regression coefficient was 0.412 and was significantly different from 0 ( $p < 0.001$ ). The impact of TR on the company's success is positive. Hypothesis H<sub>1</sub> is confirmed.

Table 1: Regression analysis: Effect of TR on a company's success

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	Constant	1.984	0.207		9.585	0.000
	TR	0.412	0.062	0.372	6.613	0.000

Dependent Variable: Company's success

<sup>1</sup> The results of the PAF method are presented in detail in Rasic (2015).

<sup>2</sup> Using the  $F$  test shows that the resulting regression function is reliable. The value of  $F$  statistics is 43.726 ( $p < 0.05$ ).



## EFFECT OF INNOVATION ON ECONOMIC GROWTH

Hypothesis H2: Innovation has a positive effect on the company success in the RS. Results of the regression (Table 2) demonstrated that the regression coefficient<sup>3</sup> of innovation (government mechanisms and cooperation with the business) was 0.319 and the regression coefficient of innovation (innovative process (innovative products/services and marketing of innovative products/services)) was 0.445. Both were significantly different from 0 ( $p < 0.001$ ). Both innovation (government mechanisms and cooperation with the business) and innovation (innovative process (innovative products/services and marketing of innovative products/services)) showed a positive effect on the company's success in the RS. Thus, hypothesis H2 is confirmed.

Table 2: Regression analysis: Effect of innovation on a company's success

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	Constant	0.769	0.198		3.887	0.000
	Innovation (government mechanisms and cooperation with the business)	0.319	0.076	0.277	4.231	0.000
	Innovation (innovative process (innovative products/services and marketing of innovative products/services))	0.445	0.072	0.405	6.202	0.000

Dependent Variable: Company's success

## EFFECT OF KNOWLEDGE ON COMPANY SUCCESS

Hypothesis H3: Knowledge has a positive effect on the company success in the RS. The results of regression (Table 3) indicated that<sup>4</sup> the regression coefficient of knowledge (obstacles for the reestablishment of scientists' collaboration with the businesses) was -0.054 and was not significantly different from 0 ( $p > 0.05$ ). The regression coefficient of knowledge (the reestablishment of scientists' collaboration with the businesses) was 0.549 and was significantly different from 0 ( $p < 0.001$ ). The independent variable knowledge (obstacles for the reestablishment of scientists' collaboration with the businesses) does not have an effect on the company's success, but knowledge (the reestablishment of scientists' collaboration with the businesses) does. Thus, hypothesis H3 is partially confirmed.

<sup>3</sup> Using the *F* test shows that the resulting regression function is reliable. The value of *F* statistics is 89.250 ( $p < 0.05$ ).

<sup>4</sup> Using the *F* test shows that the resulting regression function is reliable. The value of *F* statistics is 56.271 ( $p < 0.05$ ).



**Table 3: Regression analysis: Effect of knowledge on a company's success**

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	Constant	1.517	0.235		6.466	0.000
	Knowledge (obstacles the reestablishment of scientists' collaboration with the businesses)	-0.054	0.047	-0.065	-1.154	0.249
	Knowledge (the reestablishment of scientists' collaboration with the businesses)	0.549	0.055	0.566	10.012	0.000

Dependent Variable: Company's success

## EFFECT OF TR, INNOVATION, AND KNOWLEDGE ON QL

Hypothesis H4: TR, innovation, and knowledge have a positive effect on the QL in the RS. Results of the regression analysis (Table 4) indicated that the regression coefficient of TR was 0.056, of innovation (government mechanisms and cooperation with the business) was 0.026, of innovation (innovative process (innovative products/services and marketing of innovative products/services)) was 0.233, of knowledge (obstacles for the reestablishment of scientists' collaboration with the businesses) was -0.083, and of knowledge (the reestablishment of scientists' collaboration with the businesses) was 0.287. Only innovation (innovative process (innovative products/services and marketing of innovative products/services)) ( $p < 0.01$ ) and knowledge (the reestablishment of scientists' collaboration with the businesses) ( $p < 0.001$ ) showed a statistically significant positive impact on QL (economic and non-economic). Thus, hypothesis H4 was partially confirmed.

<sup>5</sup> Using the *F* test shows that the resulting regression function is reliable. The value of *F* statistics is 14.222 ( $p < 0.05$ ).



Table 4: Regression analysis: Effect of TR, innovation, and knowledge on QL

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	Constant	2.08	0.272		7.644	0.000
	TR	0.056	0.072	0.052	0.777	0.438
	Innovation (government mechanisms and cooperation with the business)	0.026	0.09	0.023	0.284	0.776
	Innovation (innovative process (innovative products/services and marketing of innovative products/services))	0.233	0.083	0.22	2.798	0.006
	Knowledge (obstacles for the reestablishment of scientists' collaboration with the businesses)	-0.083	0.049	-0.103	-1.682	0.094
	Knowledge (the reestablishment of scientists' collaboration with the businesses)	0.287	0.062	0.309	4.671	0.000
	Dependent Variable: Quality of life					

## MODELING CSQL-TRIK WITH THE TR, KNOWLEDGE, AND INNOVATION IMPACT ON COMPANY SUCCESS AND QL

Model summarizes the key results of the factor and regression analysis in order to preserve the environment and human health, linking the importance of TR, education, knowledge, and innovation as the basis for the amendment to the GDP, which has thus far been the main indicator used to measure economic growth. We found out that TR, government mechanisms and cooperation with the business, and the reestablishment of scientists' collaboration with the businesses are the basis for the success of business in the RS. Also, innovative processes (innovative products/services and marketing of innovative products/services) have impact on success of companies in the RS. The reestablishment of scientists' collaboration with the businesses also the key for the success of companies in the RS.

The model CSQL-TRIK supports the key areas of QL and the broader measure of company success and QL. Company success is defined as:

- Increased profit on investment funds.
- Increased realized investments.
- Increased value on the market.
- Increased added value per employee.

- Increased average number of employees.
- Increased net revenue from sales.
- Accessible financial resources.
- Increased percentage of capital.
- Increased exports of goods and services.
- Increased sales.

Following variables describe QL:

- Satisfaction with one's own life.
- Satisfaction with standard of living.
- The feeling of happiness.
- Health.
- Satisfaction with leisure activities.
- Satisfaction with social life (visits, cultural events, various forms of socializing, voluntary assistance to the needy).
- Satisfaction with the work of the police and the courts in the event of damage.
- Trust in state institutions.
- Trust in people.
- Satisfaction with employment.
- Satisfaction with housing conditions.
- Satisfaction with personal material situation (income, consumption and housing).

Non-economic aspects of QL - namely, satisfaction with one's own life, standard of living, the feeling of happiness, health and QL, satisfaction with leisure activities, satisfaction with social life (visits, cultural events, various forms of associations, voluntary assistance to the needy), satisfaction with the work of the police and the courts in the event of damage, trust in state institutions, and trust in humans. Meanwhile, the economic aspects of QL include satisfaction with employment, housing conditions, and personal material situation (income, consumption, and housing conditions). The environmental variables of QL were removed due to the results of factor analysis. The environmental aspects of QL are protection and care for the environment and the production of agricultural products for the purpose of one's own household. The environmental aspect must include lower production and consumption as well as increased production of agricultural products for one's own household. An important indicator of the environmental point of view that must be highlighted is the protection and concern about the environment, renewable fuels, and waste. The environmental aspect is also reflected in the exploitation of natural resources, which increase the GDP while reducing capital and natural resources of the country. The variable production of agricultural products for the purpose of one's own household plays an important role here.



These indicators should be consistent with environmental sustainability and reflect economic and social development (European Commission 2011). Measurement of sustainable development of the regions is based on three main dimensions: environmental factors, social factors, and economic factors (Munda & Saisana 2011).

The indicators that have a positive impact on QL are knowledge and innovation, namely innovative processes (innovative products/services and marketing of innovative products/services) and the reestablishment of scientists' collaboration with business. The reestablishment of scientists' collaboration with business and innovative processes (innovative products/services and marketing of innovative products/services) are key for the better QL in the RS.

The concept presented in Table 5 summarizes the most important indicators in the economic practice that are the result of the factor analysis and regression analysis. It focuses on the variables that have the impact on QL and economic growth. They were combined into a meaningful whole and named according to the four following dimensions to achieve better economic growth and QL. Each dimension contains its variables.



*Table 5: Variables that have impact on the company success and QL*

<b>Technology research</b>
<ul style="list-style-type: none"> <li>- Investments in research and development.</li> <li>- Support by co-financing funds for research.</li> <li>- Support by development of regional innovation strategies, improving monitoring, research and innovation.</li> <li>- Involvement in international research and innovative programs such are Framework Programme.</li> <li>- Focus on the European Union calls for funds.</li> <li>- Registration on the current tenders and benefits of European Union.</li> </ul>
<b>Innovation (government mechanisms and cooperation with the business)</b>
<ul style="list-style-type: none"> <li>- The progress of technology, knowledge and ideas obtained from other companies.</li> <li>- The benefits of co-supportive companies' environment.</li> <li>- Investing and internationalization of companies, networking and cluster development.</li> <li>- Organizations for companies support.</li> <li>- International research and development programs and projects.</li> <li>- Tax free investment in research and development.</li> <li>- The benefits of co-financing the costs of employment of researchers who have switched from academia to business.</li> </ul>
<b>Innovation (innovative process (innovative products/services and marketing of innovative products/services))</b>
<ul style="list-style-type: none"> <li>- Innovative products/services marketing in the RS.</li> <li>- Innovative products/services marketing in the RS and in the EU and other countries that are not members.</li> <li>- Innovative products/services developed in the company.</li> <li>- The company's innovative products/services developed by other institutions.</li> <li>- Innovative products/services the company placed on the market before other companies.</li> <li>- Increase of total expenditure on innovation activity.</li> </ul>
<b>Knowledge (the reestablishment of scientists' collaboration with the businesses)</b>
<ul style="list-style-type: none"> <li>- Collaboration between companies and Research Institutes.</li> <li>- Companies' recognition of importance of research and therefore interest in the Research Institutes.</li> <li>- Research Institutes' knowledge benefits companies.</li> <li>- Detection of companies' problems and using the Research Institutes' solutions.</li> <li>- Collaboration between companies, Research Institutes and "spin-off" companies.</li> </ul>

## CONCLUSION AND FUTURE RESEARCH

The results of the factor and regression analysis show that we can measure TR, innovation, and knowledge impact on the success of companies, and thus economic growth, to improve the basis of QL. We partially confirmed the hypothesis H4. The variables of innovation (innovative process (innovative products/services and marketing of innovative products/services)) and knowledge (the reestablishment of scientists' collaboration with the businesses) in the table 5 show a positive impact on the QL. The innovation and knowledge should increase QL, company's success is not self-sufficient. We detected that one can measure the impact of technology research, innovation and knowledge on economic growth. As well, we are confirming hypotheses H1 and H2. The impact of TR on the company's success is positive. Both innovation (government mechanisms and cooperation with the business) and innovation (innovative process (innovative products/services and marketing of innovative products/services)) showed a positive effect on the company's success in the RS. Thus, hypothesis H3 was partially confirmed. The independent variable knowledge (obstacles for the reestablishment of scientists' collaboration with the businesses) does not impact the company's success, but knowledge (the reestablishment of scientist's collaboration with business) does.





The model CSQL-TRIK should match the Strategy Europe 2020's goal by modeling economic growth (company success) and QL in order to represent a measure of QL aimed to preserve the environment and human health; CSQL-TRIK links the importance of TR, education, knowledge, and innovation as the basis for new contents to the GDP, which has thus far been the main indicator used to measure economic growth (company success).

We focused on promoting cooperation and synergies of technology research, knowledge technology invention-innovation diffusion process, innovation and economic growth (defined as company success) and the economic, non-economic and environmental aspect of quality of life. We did not measure economic productivity, but quality of life as a result of company success, with indicators of technology research, innovation and knowledge. Due to the effects of the entire IIDP, the full impact cannot be attributed to the current account and technology invention-innovation-diffusion process or to non-technological IIDP and many other influences. Non-technological innovation IIDP was not included in this research, nor were the values, culture, ethics, and norms, even if they were considered to be influential when it comes to TR, innovation, TIIDP and knowledge. This was limited to modeling the impact of certain factors, for which we determined the intensity of their impact on QL. The study of theoretical and empirical point of view is limited to the transition economy of RS. The limitations of the empirical part of the research are temporal, spatial and statistical type. Extraction of primary statistical data is limited to corporations, as defined by Slovenian Companies Act (ZGD 2006).

Also, there are certain restrictions for any future studies. Defined indicators of the company success showing better QL that are based on the findings of our empirical research, can be used to compose an index for triangle of TR, innovation and knowledge, e.g. for the RS. Also the research can be compared to EU-28 countries. The results of the indicators of quality of life and company success can be used to reflect the actual situation in the RS, which might affect the strategy for RS and politics as well as people as individuals. It would also be interesting to develop a simulation model CSQL-TRIK with indicators from our findings.

One must integrate QL and economic growth. If the world's political and business leaders continue with the same strategy, crises will not be controllable anymore. The damage can be collapse of the industrial civilization and destruction of environment. Environmentally friendly technologies and renewable energy sources can temporary stop the collapse. The global economic order and practice has its strengths and weaknesses. Industrial civilization faces accelerating change. The major forces driving constructive change are the rising educational levels, the growing exchange of information and the development of more sustainable and distributed information, energy and productive technologies (Taylor 2008: 192). Technologies will revolutionize all dimensions of human life, if human values allow it by development of social responsibility.



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# Recovery From Distress and Insolvency: A Comparative Analysis Using Accounting Ratios

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## *ABSTRACT*

This study analysed how insolvent firms differ from firms which have successfully recovered from distress. The results show that companies that have recovered from distress are in a position to better manage their gross profit, increase their profitability and exhibit higher interest coverage when compared to insolvent firms. Therefore, managers should focus within turnaround activities on these aspects and introduce appropriate measures to improve the associated accounting ratios. Making a clear distinction between the two states within the prediction model remains difficult and provides evidence that accounting ratios alone are not sufficient in explaining a successful turnaround when compared to the state of insolvency. It seems that there are specific non-accounting measures, not considered within the scope of this study, which may be useful to improve segregation between the two groups of firms.

*Key words:* bankruptcy prediction, financial distress, corporate crisis, logistic regression, discriminant analysis

## INTRODUCTION AND PURPOSE OF THE STUDY

The early detection of corporate crisis and insolvencies remains a prominent topic. Any attempts to gain a better understanding of the corporate distress process are valuable and relevant research in this field is therefore merited. The majority of empirical investigations used a bottom-up approach, where prediction models using different statistical techniques were developed based on specific company data (accounting ratios, financial ratios and qualitative variables) as well as the inclusion of macroeconomic indicators and the a-priori distinction of firms into the states bankrupt and non-bankrupt (Butera & Faff, 2006, p. 313 – 314; Du Jardin, 2009). Research has recognized relatively early that this dichotomous (bankrupt/non-bankrupt) thinking is not sufficient to describe the real economic situation. Instead, enterprises can be seen to have different economic and financial states which fluctuate on a continuous scale (Altman, 1968; Edmister, 1972; Ward, 1999; Haber, 2005; Cestari, Risalitti & Pierotti, 2013).

Using the dichotomous states and computing a prediction model implies implicitly that these possible in-between states are replicated and that based on specific approaches, it is possible to create a rating scale which is used to derive probabilities of default (Butera & Faff, 2006, p. 314). Such an approach does not mean, however, that there is a real understanding about how firms experiencing different economic and financial situations move within the continuous scale. It is therefore also of interest to investigate stages in-between the two states of solvent and insolvent, as it is possible to derive information about the behaviour of such firms and to gain insight towards a deeper understanding of the evolution of corporate crises and insolvencies.

As highlighted within the literature review, the amount of empirical research investigating the differences in these in-between stages is relatively low when compared to the amount of studies in the field of bankruptcy prediction as a whole. The motivation for this paper was therefore to conduct a separate study in order to address this area. More specifically, the differences between distressed and then recovered firms and insolvent firms were analyzed using selected accounting ratios, which were shown to be relevant predictors in prior studies. An attempt was then made to develop prediction models, with the aim of assigning a firm into one of these two states using logistic regression and linear discriminant analysis.

The paper is organized as follows: Firstly, an overview is provided regarding relevant prior research, where the different economic states of firms (not only solvent and insolvent) were analysed and compared. Secondly, the data selection process is described, including the variables chosen for the investigation. Within this step, the research hypothesis, research questions and the methodology are presented. Thirdly, the results from statistical pre-analyses are shown. Fourthly, the models that were developed based on logistic regression and linear discriminant analyses are explained and the results are shown. Finally, the paper concludes with a summary of the main results, the limitations of the study, some implications for practical purposes and ideas for further research.

## LITERATURE REVIEW

Some papers are presented within this section which did not use a classical distinction of firms into the states of solvent and insolvent. The selection was based on a literature review where 250 papers related to insolvency prediction have been analysed. Lau (1987) developed a five-state model based on multinomial logit analysis, where five different financial states were defined. The model was useful as an instrument in determining the financial position of a firm on a continuous scale. For certain states however, the predictability of the model was difficult and delivered unsatisfactory results (Lau, 1987, 137).

An investigation including merged and acquired companies, as well as chapter 11 and chapter 7 filings, was conducted by Kwabena (1991). Using factor analysis, it was concluded that different types of firms have some common underlying factors, but some factors are dominant for each group. Additionally in this case, the industry of the firm appears to matter. For manufacturing





firms, for example, order backlog was seen to be an important aspect. For firms in the service sector, short term borrowings were seen to be relevant (Kwabena, 1991, p. 33 – 34). Ward (1994) defined four states of financial health for his study, analysing the predictability of net income plus depreciation and amortization scaled by total debt (NOF). It was found that NOF is a better measure of economic income than net income and should therefore be favoured as a prediction variable within a multi-state model (Ward, 1994, p. 559).

The study of Poston, Harmon & Gramlich (1994) analysed bankrupt firms, firms in distress and firms in turnaround. The study was not able to achieve a satisfactory distinction between the groups and the use of financial ratios therefore seems questionable for this task. Several versions of Z-scores tended to classify distressed firms as failures and probit models tended to classify failing firms as turnarounds (Poston, Harmon & Gramlich, 1994, p. 54). Non-failed, failed and distressed acquired firms were compared by Wilson, Chong & Peel (1995). They recognized that making a distinction between failed and distressed firms is difficult, leading to the conclusion that these two types of firms have similar characteristics (Wilson, Chong & Peel, 1995, p. 43 – 44). Nevertheless, their neural network application achieved an overall accuracy of 98.2 percent, indicating that a multigroup model could be used successfully for multi-outcome business problems (Wilson, Chong & Peel, 1995, p. 44).

Chatterjee, Dhillon & Ramirez (1996) investigated the behaviour of chapter 11 filings, prepacks and private and public workout firms. They found significant differences in the size and level of debt among the four restructuring methods (Chatterjee, Dhillon & Ramirez, 1996, p. 9 – 10). Firms in workout and prepack showed a significantly higher ratio of EBIDT/Sales than chapter 11 firms. This leads to the conclusion that this type of firm is therefore in less economic distress when compared to chapter 11 firms. A similar study using chapter 7 and chapter 11 firms was conducted by Tucker & Moore (1999). The results show that the tendency to file for chapter 11 increases with the value of intangible assets with favourable business conditions in the industry, and decreases with the associated costs of this procedure (Tucker & Moore, 1999, p. 71 and 74).

The differences between distressed and recovered firms were analysed by Whitaker (1999). The severity of financial distress was negatively related to recovery. This means that firms in distress with high leverage are less likely to achieve a turnaround. Within this context, it was concluded that corrective management actions are a significant determinant for recovery and the increase in market value of the firm relative to its industry (Whitaker, 1999, p. 128 and 132). Using a Cox-proportional hazard model, Turetsky & McEwen (2001) attempted to investigate the failure process using the change of operational cash flow from positive to negative values. They tracked the occurrences of default, dividend reduction and troubled debt restructurings. Similar to Whitaker (1999), they concluded that higher financial leverage is positively associated with default. Higher liquidity levels reduce the probability of default, whereas real growth measured by ROA reduces the likelihood of bankruptcy (Turetsky & McEwen, 2001, p. 337 – 338).

Sudarsanam & Lai (2001) analysed firms identified as being distressed using Taffler's Z-score and compared them to non-distressed and recovered firms. Distressed firms displayed a decline in performance from the two healthy years pre-distress to the distress year. ROE, ROA, cashflow return to capital employed and cashflow cover for debt were seen to be good indicators for this potential decline. The performance of recovered firms was significantly superior to non-recovered firms in the post-distress years (Sudarsanam & Lai, 2001, p. 190 – 191). Filings firms, acquired firms, merged firms and liquidated firms were compared within the study of Barniv, Agarwal & Leach (2002). Using univariate analysis, certain accounting ratios showed differences between the different types of companies. They achieved relatively high classification accuracy for merged and liquidated firms, but a low level of accuracy for acquired firms (Barniv, Agarwal & Leach, 2002, p. 509 and 512).

Jones & Hensher (2004) defined three states for their study using non-failed, insolvent and bankrupt firms. Different ratios related to the cash position of the firm showed a strong statistical impact on the probability of a firm belonging to one of the three states (Jones & Hensher, 2004, p. 1029). The application of multinomial logit did not provide logical and consistent signs for all parameter estimations. When using a mixed logit model, they received high classification results, indicating that the variables obtained have a high potential to divide companies into the three defined states (Jones & Hensher, 2004, p. 1033 – 1034). A study was conducted by Sen, Ghandforoush & Stivason (2004) to divide between targets and non-targets for corporate mergers and bankrupt and non-bankrupt firms. The division between bankrupt and non-bankrupt firms functioned reasonably well





when using neural network application, but the distinction between the two types of merger targets displayed poor results (Sen, Ghandforoush & Stivason, 2004, p. 229 – 230).

Chancharat, Tian, Davy, McCrae & Lodh (2010) used a hazard model to analyse the differences between active companies, distressed external administration companies and distressed takeovers, mergers or acquisitions. The survival profile of active and distressed takeovers was very similar. This is due to the fact that distressed firms the last mentioned ones exhibited lower leverage, higher capital utilisation efficiency and a larger sized compared to the active companies (Chancharat, Tian, Davy, McCrae & Lodh, 2010, p. 41). The study of Tsai (2013) investigated slightly distressed firms, firms in reorganization or bankruptcy and non-distressed firms. Financial ratios were seen to be statistically insignificant for slightly distressed firms and therefore provide less warning of the occurrence of slight distress than of reorganization and bankruptcy events (Tsai, 2013, p. 56 and 67).

This short review shows that there are certain characteristics which are able to describe and assign firms in different in-between states. Even if some results conclude that a relatively clear differentiation between the different types seems possible, many findings do not support these results. It can be concluded that the event of distress, however it was and is defined in theory and practice, remains an unobservable process. There is therefore sufficient scope for additional research in this field, as there are a number of open questions to be addressed in order to better understand the failure and crisis process of a firm.

## DATA DESCRIPTION AND METHODOLOGY

### DATABASE

The database for this study consists of Austrian firms from different industries, where financial statements were available for the years 2008 till 2012. The year 2012 was set as the bankruptcy date: Based on this, following definitions were used:

- 2012 as bankruptcy date:  $t(0)$
- 2011 one year to bankruptcy:  $t(1)$
- 2010 two years prior to bankruptcy:  $t(2)$
- 2009 three years prior to bankruptcy:  $t(3)$
- 2008 four years prior to bankruptcy:  $t(4)$

Firms were only chosen where four consecutive years of data (2008 until 2011) were available, in order to receive a respective time series. There are several possible indicators to identify a distressed firm as proposed by literature. However, no common ground exists to explain how this economic state of the firm can be definitively measured. Instead, certain proxies were introduced for this aspect such as two or more consecutive years of operating losses (Poston, Harmon & Gramlich, 1994; Platt & Platt, 2008; Molina & Preve, 2009), current ratio of less than one (Poston, Harmon & Gramlich, 1994), negative balance in the retained earnings accounts (Poston, Harmon & Gramlich, 1994), the first year in which cash flow is less than current maturities of long-term debt



(Whitaker, 1999) or when the interest coverage ratio is lower than 1 (Jostarndt & Sautner, 2008; Pindado, Rodrigues & de la Torre, 2008; Platt & Platt, 2008; Molina & Preve, 2009).

*Table 1: Composition of groups and conditions for identification*

Group number	Group name	Number of firms in initial and validation group	Identification of distress		Identification of recovery	
0	Insolvent firms	57/19	Not relevant		Not relevant	
1	Recovered firms	50/9	Negative net income	Negative net income	Positive net income	Positive net income

Within this work, distress was defined as the situation when a firm showed operating losses (negative net income) for two consecutive years, meaning in  $t(4)$  and  $t(3)$ . After that point, the development of net income was observed in order to detect turnaround activities. Firms which had a positive net income in  $t(2)$  and  $t(1)$  were defined as being recovered from distress. A similar concept was used by Jostarndt & Sautner (2008), but their distress indicator was an interest coverage ratio based on EBIT. Insolvent firms were identified by an insolvency mark and these are entities which went bankrupt under Austrian bankruptcy law. Table 1 summarizes the number of firms in the study and the process of identification concerning the states of distress and recovery.

## VARIABLES

As a starting base, 30 accounting ratios and two ratios associated with the age of the firm in years were used. These ratios were selected based on a review of 250 papers related to the topic of bankruptcy and insolvency prediction. These ratios appeared more often than others and should therefore be suitable explanatory variables for differences between the groups of firms. The ratios are presented in the appendix of this work, accompanied by citations of the sources where they had been found in previous research.

The argument for the application of accounting ratios for the detection of distress and insolvencies is based on observations made by Turetsky & McEwen (2001). They provided evidence that such variables contain useful information for the prediction of a firm's potential to go bankrupt (Turetsky & McEwen, 2001, p. 339). This finding was confirmed by Tsai (2013), who found that financial ratios are more closely related to reorganization and bankruptcy events and are therefore suitable for the appraisal of these tasks. Based on this result, it can be concluded that accounting ratios should also be able to act as relevant discriminators for the purposes of this study. It is expected that the two types of firms can be relatively well distinguished and that it is possible to develop a well-functioning classification model.

## HYPOTHESIS AND RESEARCH QUESTIONS

The aim of the study is to test the following hypothesis as a consequence of the results of Turetsky & McEwen (2001) and Tsai (2013).

**Insolvent firms and firms in successful turnaround can be reliably distinguished with accounting ratios.**

Additionally, the following research questions shall be answered:



Which accounting ratios are significant in order to explain differences between recovered and insolvent firms?

How well can both types of firms be distinguished using accounting ratios within statistical prediction models?

## METHODOLOGY

In order to detect the potential differences between the two groups of firms, the following methodology was used: Firstly, descriptive statistics and tests for normality of the raw data were computed in order to check outliers and distributional assumptions. Secondly, data was winsorized at the 2 percent level in order to eliminate outliers and to avoid estimation problems within further model building. Thirdly, the best discriminating variables between the two groups were identified using the non-parametric U-test and Kolmogorov-Smirnov test, although parametric tests (t-test and F-test) were applied additionally for informational purposes. Fourthly, the best discriminating ratios were extracted based on the results and a check was made for multicollinearity by applying correlation analysis. Fifthly, with the remaining variables models were computed to discriminate between the two types of firms based on logistic regression and linear discriminant analysis. Lastly, the model performance was evaluated using performance measures such as AUC and Gini-coefficient.

## STATISTICAL PRE-ANALYSES AND DISCUSSION

As expected, based on the Kolmogorov-Smirnov test on 5 percent level for almost all data, the normality of data was not a given, which was visible in descriptive statistics due to high skew values. In order to avoid estimation problems, data was winsorized at the 2 percent level as proposed by literature (Löffler & Posch, 2007, p. 15 -19). A check on winsorized data shows that outliers were eliminated, but normality of data was once again not a given for all variables based on p-values within the Kolmogorov-Smirnov test on a 5 percent level (results presented in *table 2*). Logistic regression is based on maximum-likelihood estimation and is theoretically not dependent on normally distributed data, meaning that it should be relatively robust against violations of normality (Press and Wilson, 1978, p. 700; Silva, Stam and Neter, 2002, p. 404). The winsorization itself seems useful, as model accuracy can nevertheless be disturbed to a certain degree by non-normally distributed data (Hopwood, McKeown and Mutchler, 1988, p. 239; Silva, Stam and Neter, 2002, p. 413).

Due to mainly non-normally distributed data, non-parametric tests for differences (U-test and KS-test) were used (Marques de Sá, 2007, p. 201 – 204). For informational purposes, the results of the parametric t-test and F-test are shown in *table 2*. The criterion for inclusion into *table 2* was the appearance of statistically significant differences in one of the two non-parametric tests. NI/TA and NI/S can be seen as ratios of profitability (McKee, 1995; Datta & Iskandar-Datta, 1995) and in median recovered firms exhibited higher values, indicating that they are working more efficiently when compared to insolvent firms. Profitability is a measure of management effectiveness (Dambolena & Khoury, 1980; Edum-Fotwe, Price & Thorpe, 1996) and indicates that good and experienced managers are necessary for a successful turnaround (Whitaker, 1999, p. 132).

NI/S seems to be a stronger predictor as it showed statistical significance in both non-parametric tests. It is also interesting to have a look at the development of these ratios from  $t(2)$  to  $t(1)$ . For insolvent firms, NI/TA decreased from a median value of 3.2 to 1.8 percent and for NI/S, the median value deteriorated from 3.11 to 1.69 percent. Recovered firms display a different behaviour. NI/TA decreased slightly from 2.71 to 2.55 percent and NI/S improved strongly from 2.95 to 4.45 percent. This aspect is an indicator that profitability and efficiency seem to play a key role in successful turnaround strategies and in restructuring (Datta & Iskandar-Datta, 1995, p. 32).

Within all tests for differences, GP/TA showed the strongest ability to differentiate as it exhibited statistically significant values. Recovered firms are much better able to use their total assets for gross profit generation (Doumpos & Zopounidis, 1998). This



is visible at the median values of this ratio for both types of firms within *table 2*. Here, the development between  $t(2)$  and  $t(1)$  is also an interesting indicator. The median value for insolvent firms changes from 62.41 to 52.72 percent and indicates that such companies cannot exploit their assets optimally. In contrast, for recovered firms the median values changes from 67.65 to 81.83 percent. It is a good indicator of turnaround management quality and undermines the above mentioned aspects in connection with NI/TA and NI/S, that an increase in efficiency and profitability are main drivers of successful turnaround strategies.

For  $t(1)$ , two other interesting ratios were found to be relevant for discrimination between the two groups of firms. Both are related to interest coverage, based on EBIT (EBIT/INT or INT/EBIT). Successful turnarounds display better values for these ratios and therefore have a lower risk of insolvency (Sudarsanam & Lai, 2001; Bhattacharjee, Higson, Holly & Kattuman, 2009; Rose-Green & Lovata, 2013). For insolvent firms, EBIT/INT deteriorated from 3.57 to 1.92 and for successful turnarounds, this ratio decreased only slightly from 4.16 to 4.04. The effect for insolvent firms has two components. Firstly, the ratio deteriorated because the debt-ratio increased. The logical consequence is that interest expenses increased, thereby affecting this ratio negatively. Secondly, due to higher distress risk, the risk premia being charged by banks are increasing. This aspect, combined with the additional loss of tax benefits from debt financing, therefore increases the overall financing cost, which also negatively affects this ratio (Almeida & Philippon, 2007, p. 2579 – 2581).

Several ratios including current assets were significant in  $t(2)$ . The strongest of these is CA/TA. Insolvent firms showed lower values for the period two years prior to insolvency when compared to recovered firms. Nevertheless, this statistically significant difference diminished totally in  $t(1)$ , due to the value of the decrease for recovered firms being similar to the decrease in value for insolvent firms. This means that turnaround activities also include tighter management of working capital, which helps to improve cash flow from operations. The differences between distress, successful turnaround and insolvency can therefore be explained by three key factors: firstly, an increase in efficiency and profitability (NI/S and GP/TA); secondly, a much better interest coverage (EBIT/INT) and; lastly, an improvement in working capital management (CA/TA).

Based on these results, the variables identified from *table 2* were used for further analyses. Correlation analysis is used as a last check in the pre-analysis in order to detect multicollinearity. This could be a problem that affects the discriminatory power of models, when such variables are included within prediction models (Ho, 2006, p. 248). Correlation analysis reveals a high positive correlation (0.579) between NI/S\_2011 and NI/S\_2011 and a high positive correlation (0.563) between S/CA\_2010 and CA/S\_2010. All values are below 0.7, so that multicollinearity cannot be assumed. The next step was therefore to use the variables and to compute the logistic regression function for  $t(1)$  and  $t(2)$ .



Table 2: Best discriminating variables based parametric and non-parametric tests

Ratio	Group	Test for Normality	Descriptive Statistics			Parametric Tests for Differences c)		Non-Parametric c) Tests for Differences	
		KS-Test	Mean	Median	Std.-Dev.	t-Test	F-Test	U-Test	KS-Test
		p-value <sup>b)</sup>	values	values	values	p-value	p-value	p-value	p-value
NI/TA_2011	0	0.010	0.030	0.018	0.070	0.144	0.230	0.098	0.005
	1	0.000	0.048	0.026	0.058				
NI/S_2011	0	0.000	0.019	0.017	0.197	<b>0.026</b>	0.365	0.028	0.008
	1	0.000	0.131	0.045	0.309				
GP/TA_2011	0	0.000	0.784	0.527	0.964	0.007	0.000	0.019	0.025
	1	0.000	1.534	0.818	1.767				
EBIT/INT_2011	0	0.000	39.063	1.917	130.018	<b>0.026</b>	0.000	0.041	0.167
	1	0.000	595.568	4.041	1857.971				
INT/EBIT_2011	0	<b>.200<sup>a)</sup></b>	0.484	0.460	0.397	0.767	0.087	<b>0.048</b>	0.025
	1	0.000	0.448	0.197	0.826				
TE/TA_2010	0	0.003	0.305	0.259	0.242	0.144	0.298	0.106	0.030
	1	0.020	0.374	0.342	0.239				
TD(TA_2010	0	0.003	0.695	0.741	0.242	0.144	0.298	0.106	0.030
	1	0.020	0.626	0.658	0.239				
CA/S_2010	0	0.000	0.770	0.363	1.101	0.218	<b>0.008</b>	0.454	0.034
	1	0.000	0.563	0.425	0.456				
S/CA_2010	0	0.001	3.334	2.757	2.524	0.169	<b>0.002</b>	0.454	0.034
	1	<b>0.074</b>	2.747	2.355	1.719				
CA/TA_2010	0	<b>.200<sup>a)</sup></b>	0.556	0.525	0.271	<b>0.018</b>	0.163	<b>0.029</b>	0.014
	1	0.005	0.675	0.735	0.235				

a. denotes the lower boundary of the real statistical significance

b. bold number for p-values based on KS-test show ratios which are normally distributed

c. bold numbers for p-values show statistically significant differences on the 5 percent level

## MODEL DEVELOPMENT AND RESULTS

Only CA/TA was included within the logistic regression function for  $t(2)$ . It can be observed that the model classifies the initial sample better than the null model (including only a constant), based on the measure of overall accuracy. Therefore, the inclusion of the variable in the null model improved classification accuracy and the model is better at assigning the firms into the two groups than a random guess. Nevertheless, the quality seems questionable for two reasons. Firstly, the  $R^2$  according to Nagelkerke is about 7 percent, which means that only 7 percent of the variation in the dependent variable can be explained. Secondly, the overall accuracy of 63.55 percent is low and a closer look at type I and II errors reveals that a relatively high percentage of firms are assigned into the wrong category.

Two models are presented for  $t(1)$ , as both are interesting and make interpretations possible. The first model has two variables and can explain approximately 19 percent of the variations, whereas the second model with three variables is able to explain



approximately 27 percent. Even if the overall accuracy of the first model is higher when compared to the second model, the second is more interesting, as it has a lower type I error based on the classification matrix for the initial sample. The signs for all of the variables are consistent with expectations and confirm results from prior research.

*Table 3: Summary about statistics and model parameters for logistic regression*

Observation Period	Variables	Test statistics			Model parameters		Null-model Accuracy in %	Regression Model Accuracy in %
		R <sup>2</sup> (Nagelkerke)	Sign. HL-test	Sign. in model	Regression coefficient	Exp(B)		
Model t(2)	Constant Term	0,07	0,40	0,018	-1,280	0,278	53,27	63,55
	CA/TA			0,021	1,861	6,427		
Model t(1) <sup>a)</sup>	Constant Term	0,19	0,38	0,003	-0,900	0,406	53,27	64,49
	NI/S			0,037	3,205	24,653		
	GP/TA			0,006	0,513	1,670		
Model t(1) <sup>b)</sup>	Constant Term	0,27	0,24	0,001	-1,041	0,353	53,27	62,62
	NI/S			0,035	3,163	23,653		
	GP/TA			0,008	0,489	1,630		
	EBIT/INT			0,171	0,001	1,001		

a. First model for t(1) contains two explanatory variables

b. Second model for t(1) contains three explanatory variables

Firms exhibiting a higher profitability (denoted by NI/S) have a lower probability of insolvency (Begley, Ming & Watts, 1996; Doumpou & Zopounidis, 1998; Kahya & Theodossiou, 1999; Lennox, 1999, Chi & Tang, 2006; Pindado, Rodrigues & de la Torre, 2008). The higher the ratio, the more effectively management has acted (Dambolena & Khoury, 1980). It is also an indicator that firms returned from distress to a “normal” stage within the turnaround process. This suggests that the pre-stages of this process had already been mastered successfully (Pretorius, 2008, p. 419). A higher value for GP/TA is a sign of a firm’s health (Doumpou & Zopounidis, 1998, p. 84), an aspect which was confirmed within this study. High values for interest coverage can be positively associated with a firm’s health (Chatterjee & Srinivasan, 1992; Nam & Jinn, 2000; Bhattacharjee, Higson, Holly & Kattuman, 2009; Altman, Sabato & Wilson, 2010) and are therefore typical for recovered firms (Sudarsanam & Lai, 2001; Rose-Green & Lovata, 2013).

The three models can be written based on the regression coefficients as shown in equations one to three listed below. A standard 0.5 threshold was set to distinguish between the two groups. For probabilities above this value, a firm is classified as being recovered and otherwise as being insolvent.

$$F_{t(2)} = \frac{1}{1 + e^{(1.2801 - 1.86053 * CA/TA)}} \quad (1)$$

$$F_{t(1)a} = \frac{1}{1 + e^{(0.90049 - 3.20491 * NI/S - 0.51309 * GP/TA)}} \quad (2)$$

$$F_{t(1)b} = \frac{1}{1 + e^{(1.04145 - 3.16349 * NI/S - 0.4885 * GP/TA - 0.00143 * EBIT/INT)}} \quad (3)$$



In order to determine whether regression analysis really measures the states of the dependent variables, a test for objectivity of multivariate linear discriminant functions was computed for  $t(2)$  and  $t(1)$ . The respective results are shown below and based on Mahalanobis distance, the same variables appeared as discriminators as for logistic regression, where the threshold for differentiation was set at zero (a firm showing a lower value than zero was assigned as being insolvent and otherwise as being a successful turnaround):

$$D_{t(2)} = -1.12649 + 1.830586 * CA / TA \quad (4)$$

$$D_{t(1)} = -0.83913 + 2.2419 * NI / S + 0.47889 * GP / TA + 3.676.10^{-4} * EBIT / INT \quad (5)$$

The signs of CA/TA for the first function are in accordance with the results from logistic regression and also with the descriptive statistics. The higher the variable, the more likely a firm will be assigned as successful turnaround. The model is able to explain 5.2 percent of the variation in the dependent variable, which is weaker when compared to the model computed with logistic regression. The second function was able to explain 17.1 percent of the variation and delivered an overall classification accuracy of 65.4 percent (65.4 percent using cross validation) of the cases correctly classified from the initial group. This is a slightly higher value than that obtained with logistic regression, even if non-normality of data and the unequal variance-covariance-matrices (p-value of 0.0 within Box-test) were taken as a given. Several studies showed that there is sensitivity to linear discriminant analysis in relation to violation of these two aspects and that model development can therefore be affected (Hopwood, McKeown & Mutchler, 1988, p. 292; Klecka, 1989, p. 61; Subhash, 1996, p. 264; Hayden & Porath, 2011, p. 4). The results of this check for objectivity lead to the conclusion that the models developed with logistic regression measure the differences between the two groups of firms (even if classification results are weak), as the discriminant functions provide similar results.

The following table shows results concerning the classification accuracy of the models using out-of-sample (application of the model to a new sample of firms not used for model building) and out-of-time validation (application of the model on data on a different time period) as proposed by Ward (1999, p. 168 - 169) and Sobehart, Keenan & Stein (2001, p. 59 - 61). Additionally, model performance was evaluated using the technique of AUC and Gini-coefficients as recognized methods for this task (Grzybowski & Younger, 1997; Sobehart, Keenan & Stein, 2011; Fawcett, 2006; Anderson, 2007).

**Table 4: Summary of classification accuracies using validation techniques and performance measures for the two best models**

	Logistic Regression $t(1)$ b				Discriminant Analysis $t(1)$			
	$t-1$		$t-2$		$t-1$		$t-2$	
	Initial	Valid. OOS	Initial	Valid. OOT	Initial	Valid. OOS	Initial	Valid. OOT
AUC	0.602				0.594			
Gini-Coeff.	0.204				0.188			
Accuracy	0.626	0.536	0.477	0.571	0.654	0.500	0.486	0.571
Type I Error	0.175	0.368	0.263	0.421	0.193	0.421	0.246	0.421
Type II Error	0.600	0.667	0.820	0.444	0.520	0.667	0.820	0.444
F-measures	0.500	0.316	0.243	0.455	0.565	0.300	0.247	0.455

OOS = out-of-sample validation

OOT = out-of-time validation





All of the Gini-coefficients showed values under 0.5, meaning that they are not satisfactory and therefore not useful as prediction tools (Anderson, 2007, p. 205). The best results were obtained with the logistic regression model from  $t(1)$  using three variables (Gini-coefficient: 0.204) followed by the linear discriminant model from  $t(1)$  (Gini-coefficient: 0.188), which are the only ones reported within *table 4* below. The results confirm findings from prior studies, namely that it is difficult to differentiate between insolvent firms and distressed recovered firms, because they seem to have certain similarities which hinder the development of a well-functioning prediction model (Poston, Harmon & Gramlich, 1994; Wilson, Chong & Peel, 1995; Barniv, Agarwal & Leach, 2002). The models were better at predicting insolvent cases, but showed significant weakness in recognizing successful turnarounds, which is similar to results found by Jones & Hensher (2004) and Liou & Smith (2007).

## SUMMARY OF THE RESULTS, HYPOTHESIS TESTING AND RESEARCH QUESTIONS

This study showed that making distinctions between the different states of firms is difficult, therefore restricting model development in this field. This confirms results from prior research, where the distinction between certain states was also difficult, in that the models were not able to deliver satisfactory classification results (Lau, 1987; Poston, Harmon & Gramlich, 1994; Barniv, Agarwal & Leach, 2002; Chancharat, Tian, Davy, McCrae & Lodh, 2010, p. 41). Instead, the models classified recovered firms into insolvent firms based on the type II errors obtained, so that a similar bias was found as with Poston, Harmon & Gramlich (1994) concerning the application of different Z-score measures. The explanatory variables do not appear to have the relevant information required to clearly distinguish between the two types of firms (Poston, Harmon & Gramlich, 1994, p. 54).

This study leads to the conclusion that accounting ratios alone are not able to sufficiently describe the two defined states of this study, which is a similar result to prior research (Poston, Harmon & Gramlich, 1994, p. 54; Liou & Smith, 2007, p. 28). They do not seem to be useful in predicting a distressed firm's potential progression towards bankruptcy as reported in Turetsky & McEwen (2001, p. 339) or in Jones & Hensher (2004, p. 1033), meaning that a contrary result was found within this study. This is also visible in  $R^2$  and Wilks-Lambda measures in the case of model building. A high portion of unexplained variances for the variables remained, suggesting that other potential discriminators also seem to be relevant for this task. Such a finding confirms the recognized view in research that a prediction model should include different types of variables (Grunter, Norden & Weber, 2005; Muller, Steyn-Bruwer & Hamman, 2009; Altman, Sabato & Wilson, 2010; Iazzolino, Migliano & Gregorace, 2013).

The hypothesis of this work must therefore be rejected based on the low Gini-coefficients of the models. Based on Anderson (2007, p. 205,) values below 0.5 are indicators of a weak performance and this threshold was used as a benchmark for testing the hypothesis. Insolvent and recovered firms cannot be properly distinguished. Even if recovered firms exhibited two consecutive years of positive net income, both types of firms seem to have common underlying factors, making a better segregation difficult. This may be due to several limitations of the study, which are highlighted within the next chapter. The rejection of the hypothesis leads to the answer for the second research question; that both types of firms cannot be well differentiated when accounting ratios are used.

Concerning the first research question, it can be stated that NI/S, GP/TA and EBIT/INT are the best discriminating variables one year prior to the event of insolvency. The signs for all of these ratios were in accordance with expectations and the results of prior research. For the period two years prior to bankruptcy, only one variable (CA/TA) was a relevant discriminator, which emphasized the problem of early detection as was visible in different studies. The further away the observation period is from the event of bankruptcy, the worse the prediction results are when using accounting ratios, which is in congruence with findings from prior research (for example in Altman, 1968; Kwon & Wild, 1994; Brabazon & Keenan, 2004; Chi & Tang, 2006; Muller, Steyn-Bruwer & Hamman, 2009).

## LIMITATION, IMPLICATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

The results of this study have certain limitations:

- A relatively small sample of data was used to develop the models, due to restricted data availability.
- Data was, in most cases, non-normally distributed, which could have an effect on the estimation procedure for logistic regression and discriminant analysis. Even if this is not a problem for logistic regression (Press and Wilson, 1978, p. 700; Silva, Stam and Neter, 2002, p. 404) and instead is a more important problem for discriminant analysis (Hopwood, McKeown & Mutchler, 1988, p. 292; Klecka, 1989, p. 61; Subhash, 1996, p. 264; Hayden & Porath, 2011, p. 4), both methods did not differ substantially in their performance. Nevertheless, the classification accuracy could have been optimized using normally distributed data, but this was not possible due to the lack of sufficient data.
- The definition of distress and recovery could be a biased measure as it is possibly not linked, from a theoretical viewpoint, to the real economic and financial situation of the firm, even if it follows the definitions from prior research. It could therefore be argued that a finer granulation of economic and financial states is necessary in order to better capture the distress process and to obtain better differentiation results.

For research purposes, it is worth investigating the testing of other proxies of distress and whether they could deliver a better segregation between the two groups of firms. Such an attempt would be useful in order to get a better understanding of the distress process and could lead to a common definition of distress for research purposes. It would also be interesting to analyse additional model variables not derived from financial statements (such as industry benchmarks, macroeconomic variables etc.), in order to test their incremental contribution to an improved model performance and classification accuracy.

Based on the results of the studies, it is recommended for practical purposes that managers tighten the purchase process of the firm in order to improve gross profit, which in turn leads to increased profitability. This aspect is also crucial in order to gain sufficient EBIT for the coverage of interest payments. Concerning working capital management, the relation CA/TA can be improved using stricter debtor and inventory management. These combined factors are the main drivers for a successful recovery and turnaround process of a firm and help to prevent insolvency.



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## APPENDIX

Table 5: Independent variables selected for research based on literature review

Ratios	Computation	References
AGE	Age of the firm in years	Chi & Tang (2006); Chancharat, Tian, Davy, McCrae & Lodh (2010)
Ln(AGE)	Ln(Age of the firm in years)	In accordance to the variable AGE the logarithm was used
SIZE I	Ln(Total Assets)	Dawley, Hoffman & Brockman (2003), Grunert, Norden & Weber (2005), Chi & Tang (2006); Situm (2014)
SIZE II	Ln(Sales)	Opler & Titman (1994); Chancharat, Tian, Davy, McCrae & Lodh (2010); Situm (2014)
CF/TD	Cash Flow (Net Income + Depreciation)/Total Debt	Beaver (1966); Blum (1974); Frydman, Altman & Kao (1985); Ahn, Cho & Kim (2000)
NI/TA	Net Income/Total Assets	Beaver (1966); Bryant (1997); Chava & Jarrow (2004); Ohlson (1980); Zmijewski (1984)
NI/S	Net Income/Sales	Chalos (1985); Shah & Murtaza (2000); Li & Sun (2011)
EBIT/TA	EBIT/Total Assets	Altman (1968); Frydman, Altman & Kao (1985); Grunert, Norden & Weber (2005)
EBT/TE	Earnings before Taxes /Total Equity	Bruse (1978); Pompe & Bilderbeek (2005); Sarlija & Jeger (2011)
EBIT/S	EBIT/Sales	Sudarsanam & Lai (2001)
EBIT/TD	EBIT/Total Debt	Pacey & Pham (1990); Sudarsanam & Lai (2001); Charitou, Neophytou & Charalambous (2004);
EBITDA/S	EBITDA/Sales	Platt & Platt (2002)
EBITDA/TD	EBITDA/Total Assets	Pacey & Pham (1990); Charitou, Neophytou & Charalambous (2004)
TE/TA	Total Equity/Total Assets	Laitinen & Laitinen (2000); Pompe & Bilderbeek (2005); Grunert, Norden & Weber (2005)
TD/TA	Total Debt/Total Assets	Bryant (1997); Shah & Murtaza (2000); Zmijewski (1984); Yeh, Chi & Hsu (2010); Tsai (2013)
RE/TA	Retained Earnings/Total Assets	Altman (1968); Coats & Fant (1993); Neves & Vieira (2006)
S/TA	Sales/Total Assets	Altman (1968); McKee (2003); Brabazon & Keenan (2004); Tsai (2013)
S/TE	Sales/Total Equity	Bruse (1978)
GP/TA	Gross Profit/Total Assets	Doumpos & Zopounidis (1999); Atiya (2001)
GP/S	Gross Profit/Sales	Ko, Blocher & Lin (2001)
S/FA	Sales/Fixed Assets	Ko, Blocher & Lin (2011); Min & Lee (2005); Chi & Tang (2006); Huang, Tsai, Yen & Cheng (2008)
DEP/TA	Depreciation/Total Assets	Chi & Tang (2006)
TAX/TA	Income Taxes/Sales	Hodges, Cluskey & Bian-Xuan (2005)
INT/S	Interest Expenses/Sales	Min & Lee (2005); Min & Lee (2008)
INT/TD	Interest Expenses/Total Debt	Min, Lee & Han (2006)
EBIT/INT	EBIT/Interest Expenses	Altman, Haldeman & Narayanan (1977); Shah & Murtaza (2000); Brabazon & Keenan (2004); Li & Sun (2011)
INT/EBIT	Interest Expenses/EBIT	In accordance to the references concerning, the reciprocal of EBIT/INT was used
EBITDA/INT	EBITDA/Interest Expenses	Altman, Sabato & Wilson (2010); Iazzolino, Migliano & Gregorace (2013)



Ratios	Computation	References
INT/ EBITDA	Interest Expenses/EBITDA	In accordance to the references concerning, the reciprocal of EBITDA/INT was used
CA/S	Current Assets/Sales	Kim & McLeod (1999); Sen, Ghandforoush & Stivason (2004); Yeh, Chi & Hsu (2010)
S/CA	Sales/Current Assets	Low, Nor & Yatim (2001)
CA/TA	Current Assets/Total Assets	Casey & Bartczak (1985); Frydman, Altman & Kao (1985); Yeh, Chi & Hsu (2010); Iazzolino, Migliano & Gregorace (2013)



# Multicriteria Comparison of Regional Efficiency Within Selected EU15 and EU13 Countries: Dea Approach

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## *ABSTRACT*

Europe's competitiveness depends on a multiplicity of actions that can optimise the potentials within its regions which are increasingly becoming the drivers of the economy. All regions possess development opportunities – however, use these options enough and hence the competitiveness of European regions must be efficient enough. The paper is focused on using Data Envelopment Analysis for comparison the dynamic efficiency within the group of European NUTS 2 regions. In the paper, DEA method is applied to 83 NUTS regions in the Visegrad Four countries (V<sub>4</sub>) in comparison with selected advanced European Union (EU) countries – Austria and Germany, and evaluate their efficiency within the selected factors of competitiveness based on Regional Competitiveness Index. Based on this approach is thus possible to recognize spatial variations in location factors influencing the attractiveness of regions. Results obtained by advanced DEA models – FDR and FRH indicate in which NUTS 2 region should be policy making authorities in order to stimulate regional development and provide more quality of life to citizens.

*Key words: Competitiveness, DEA method, efficiency, model FDH/FRH, EU NUTS 2 region*

## INTRODUCTION

Over the past half century, the European Union (EU) has been successful in securing high and rising living standards for their citizens. Due to the financial and economic crisis of the last five years, the EU is going through one of the most difficult periods since its establishment, with multiple challenges facing the region's policy-makers. As the World Economic Forum (WEF) mentioned, there is widespread agreement that the root causes of this prolonged crisis lie in the lack of competitiveness of many countries (WEF, 2013). The EU faces increased competition from other continents, their nations, regions and cities. Europe's global competitiveness depends on a multiplicity of actions that can optimise the potentials within its regions. An asset for Europe is its rich regional diversity which for each region and larger territory represents a unique set of potentials and challenges for development calling for a corresponding targeted policy mix to become reality. This regional diversity represented by specific territorial endowment is also possible to consider as a competitive advantage of each region. Knowledge and understanding of the territory is an important prerequisite for ensuring a future development for competitive attractive places.

Increasing the competitiveness of Europe and its regions is one of the main aims of the EU. Process of achieving an increasing trend of performance and a higher level of competitiveness is significantly difficult by the heterogeneity of the EU countries and regions in many areas. Although the EU is one of the most developed parts of the world with high living standards, there exist significant and huge economic, social and territorial disparities having a negative impact on the balanced development across Member States and their regions, and thus weaken EU's performance in a global context. European integration process is thus guided by striving for two different objectives: to foster economic competitiveness and to reduce differences, as stressed W. Molle (2007). In relation to competitiveness, performance and its two parts (efficiency and productivity) are complementary objectives, which determine the long-term development.

Motivation of this paper is based on mutual relationship between two significant themes presented by performance and competitiveness in the context of regional economies. At a time when the EU and all its Member States have to deal with increased pressures on public balances, stemming from demographic trends and globalisation, the improvement of the efficiency of public spending features high on the political agenda. This fact is closely connect with the aim of competitiveness, because rational using of sources/funds for activities could ensure the effective provision of these activities and their corresponding results, which is having an impact on the competitive advantages of each territory. From this point of views, *the aim of the paper* is to measure, evaluate and compare the efficiency level of EU NUTS 2 regions within the group of Visegrad Four (V4), i.e. Czech Republic, Hungary, Poland and Slovakia, in comparison with EU NUTS 2 region of advanced countries such as Austria and Germany by application of *Data Envelopment Analysis* (DEA) models. The performance analysis is used for evaluating regional development quality and potential (with respect to the regional factors endowment). Application of DEA method is based on assumption that *efficiency* of evaluated regions calculated by DEA method can be seen as the *source of regional competitiveness (competitive potential)*; see e.g. (Staníčková and Melecký, 2012). Because efficiency analysis is closely lined with competitiveness, the EU Regional Competitiveness Index (RCI) is used as initial database and approach. The paper shows that the efficiency in particular varies significantly between evaluated EU NUTS 2 regions, resp. where is potential for increased efficiency and improved thus competitiveness.



## PERFORMANCE IMPORTANCE OF EFFICIENCY FOR COMPETITIVENESS – LINKS BETWEEN CONCEPTS

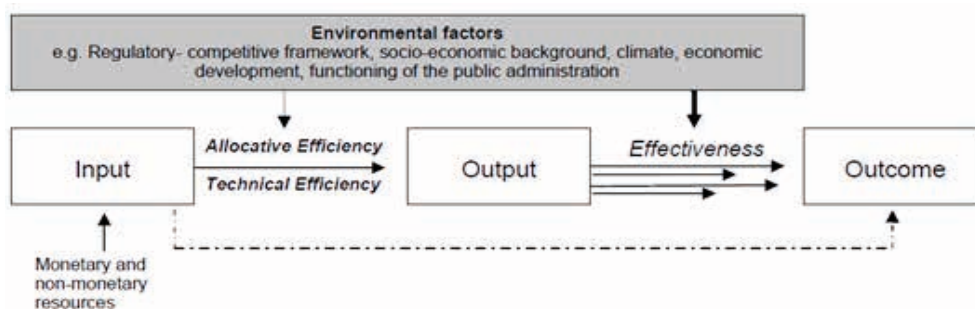
Measurement, analysis and evaluation of productivity changes, efficiency and level of competitiveness are controversial topics acquire great interest among researchers; see e.g. A. S. Camanho and R. G. Dyson, 2006; J. Khan and W. Soverall, 2007; L. Fojtíková, 2011 or B. Vahalík, 2014. *Competitiveness* remains a concept that can be understood in different ways and levels despite widespread acceptance of its importance. The concept of competitiveness is distinguished at different levels – *microeconomic, macroeconomic and regional*; see e.g. P. Krugman (1994). Competitiveness is monitored characteristic of national economies which is increasingly appearing in evaluating their performance and prosperity, welfare and living standards. The need for a theoretical definition of competitiveness at macroeconomic level emerged with the development of globalization process in the world economy as a result of increased competition between countries. Nowadays, in the global economy *regions are increasingly becoming the drivers of the economy* and generally one of the most striking features of regional economies is the presence of clusters M. E. Porter (2003). Current economic fundamentals are threatened by shifting of production activities to places with better conditions. Competitiveness is affected by the regionalization of public policy because of shifting of decision-making and coordination of activities at regional level. Interest has grown in the regional foundations of national competitiveness, and with developing new forms of regionally based policy interventions to help improve competitiveness of every region and hence the national economy as a whole.

Territories need highly performing units in order to meet their goals, to deliver the products and services they specialized in, and finally to achieve competitive advantage. Low performance and not achieving the goals might be experienced as dissatisfying or even as a failure. Differences in performance across territories are seen by government as important policy targets. For a number of years, government objectives have been set not only in terms of improving national productivity performance against other countries but also in creating conditions to allow less productive countries to reduce the 'gap' between themselves and the most productive ones. Comparative analysis of performance in public sector is thus starting point for studying the role of efficiency, effectiveness and productivity regarding economic governance of resources utilization by public management for achieving medium/long-term objectives of economic recovery and sustainable development of national economies (U. Mandl, A. Dierx and F. Ilzkovitz, 2008).

Performance can be achieved under the conditions of maximizing the results of an action in relation to the resources used, and it is calculated by comparing the effects/outputs obtained in their efforts/inputs. Figure 1 illustrates the conceptual framework of efficiency and effectiveness. The efficiency is given by the ratio of inputs to outputs, but there is difference between technical efficiency and allocative efficiency. Technical efficiency implies a relation between inputs and outputs on the frontier production curve (i.e. productivity), but not any form of technical efficiency makes sense in economic terms, and this deficiency is captured through allocative efficiency that requires a cost/benefit ratio. The effectiveness implies a relationship between outputs and outcomes. The distinction between output and outcome must be made. The outcome is often linked to welfare or growth objectives and therefore may be influenced by multiple factors and also by political choice.



Figure 1: Relationship between Efficiency and Effectiveness



Source: Mandl, Dierx and Ilzkovitz, 2008

The concept of competitiveness is thus usually linked to productivity. Increasing productivity is generally considered to be the only sustainable way of improving living standards in the long term = the main aim of competitiveness' concept. According to the Institute for Management and Development (IMD), competitiveness measures “*how a nation manages the totality of its resources and competencies to increase the prosperity of its people*” (IMD, 2012, p. 502). This understanding of competitiveness and interpretation is thus closely linked with understanding of efficiency and effectiveness, see Figure 1.

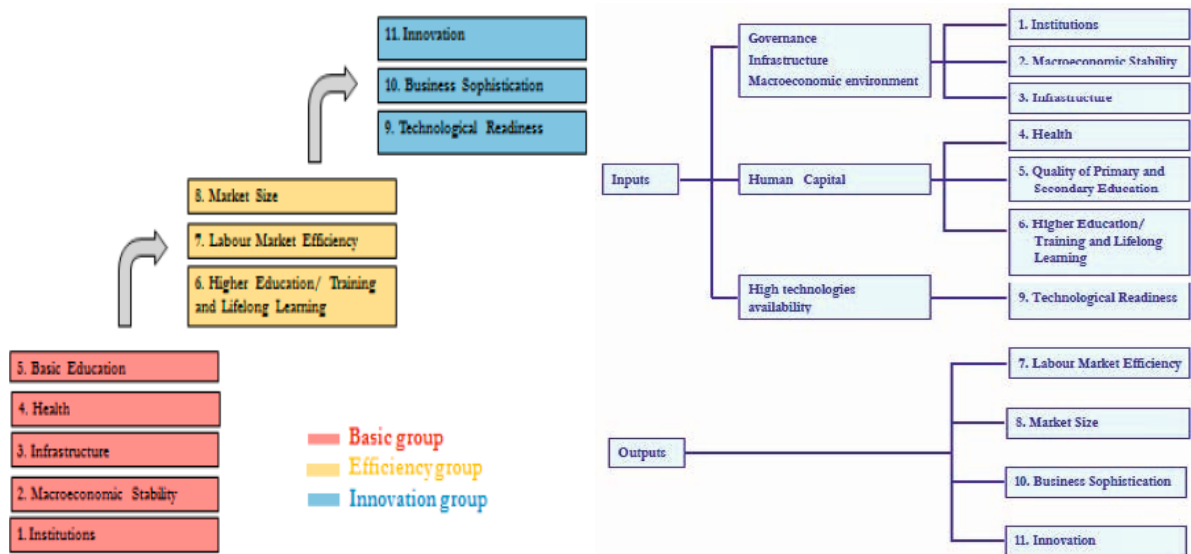
## EMPIRICAL BACKGROUND FOR EVALUATION OF REGIONAL EFFICIENCY BY DEA METHOD

With respect to facts mentioned above, the initial *hypothesis of analysis* is determined. The hypothesis is based on the assumption that regions achieving best results in efficiency are advanced EU NUTS 2 regions in old EU Member States and these regions have the best using of their competitive advantages and therefore the greatest growth potential. DEA is in following analysis applied to 83 EU NUTS 2 regions within the group of V4 and comparison with regions of advanced EU countries – Austria and Germany.

The efficiency analysis starts from building database of indicators that are part of a common approach of World Economic Forum (WEF) and EU in the form of *Regional Competitiveness Index* (RCI) created by P. Annoni and K. Kozovska (2010) in 2010, and then in 2013 updated by P. Annoni and L. Dijkstra (2013). To improve the understanding of territorial competitiveness at the regional level, the European Commission has developed this index which shows the strengths and weaknesses of each of the EU NUTS 2 regions. The aim of this approach is thus to develop a rigorous method to benchmark regional competitiveness and to identify the key factors which drive the low competitiveness performance of some regions. The RCI is based on eleven pillars describing both inputs and outputs of territorial competitiveness, grouped into three sets describing basic, efficiency and innovative factors of competitiveness (see Figure 2). Pillars may be grouped according to the different dimensions (*input versus output aspects*) of competitiveness they describe. The terms ‘*inputs*’ and ‘*outputs*’ are meant to classify pillars into those which describe driving forces of competitiveness, also in terms of long-term potentiality, and those which are direct or indirect outcomes of a competitive society and economy. From this point of view, *methodology of RCI is suitable for measuring competitiveness by DEA method* (Annoni, Kozovska, 2010).



Figure 2: RCI Framework and Interpretation of Pillars Included Input-Output Dimension



Source: Annoni and Kozovska, 2010; Annoni and Dijkstra, 2013

The RCI data file consists of 66 indicators in 2010, and 73 indicators in 2013. In our research, database analysis consists of 26 selected indicators – 13 of them are inputs and 13 outputs. The reference period started from 2000 to 2010, i.e. it was very turbulent period for the EU (the EU enlargement, economic and financial crisis, etc.) and with respect to competitiveness, the Lisbon Strategy for increasing the EU competitiveness was applied and implemented. We do not use all indicators included in RCI because all indicators were not available for the whole period at regional level. Used indicators are listed in Table 1 and the preferred source has been the European Statistical Office (Eurostat).

Table 1: Indicators for Data Development Analysis

Indicators of Inputs	Indicators of Outputs
Total Intramural R&D Expenditure,	Gross Domestic Product,
Labour Productivity per Person Employed,	Disposable Income,
Gross Fixed Capital Formation,	Human Resources in Science and Technology,
Motorway Transport - Length of Motorways,	Patent Applications to the European Patent Office,
Railway Transport - Length of Tracks,	Employment in technology and knowledge-intensive sectors,
Hospital Beds,	Employment Rate (15 to 64 years),
Road Fatalities,	Employment Rate (55 to 64 years),
Total Public Expenditure at Education,	Unemployment Rate (15 to 64 years),
Participants in Education,	Unemployment Rate of Young (15 to 24 years),
Collective Tourist Accommodation Establishments,	Long-Term Unemployment,
Tourism Intensity,	Compensation of Employees,
Crude Death Rate,	Venture Capital,
Victims in Road Accident.	Gross Value Added in Sophisticated Sectors.

Source: Own elaboration, 2015



Since the method of Data Envelopment Analysis (DEA) was first introduced A. Charnes, W.W. Cooper and E. Rhodes in 1978, researchers in a number of fields have quickly recognized that it is an excellent and easily used methodology for modelling operational processes for performance evaluations, e.g. J. Hančlová et al., 2010; L. Melecký, 2011; M. Staničková and K. Skokan, 2012. This has been accompanied by other developments. DEA is based on simple *Farrell model* for measuring the efficiency of units with one input and one output, which has been found out in 1957. Farrell model has been initially expanded in 1978 by A. Charnes, W.W. Cooper and E. Rhodes (CCR model) and later modified in 1984 by R. A. Banker, A. Charnes and W. W. Cooper (BCC model). DEA methods also include advanced additive models, such as *Slack-Based Model* (SBM) performed by K. Tone in 2002 or *Free Disposal Hull* (FDH) and *Free Replicability Hull* (FRH) models that have been firstly formulated in 1984 by D. Deprins, D. Simar and H. Tulkens (Cook, Zhu, 2008).

DEA is mathematical approach for providing a relative efficiency assessment and evaluating performance of a set of peer entities called Decision Making Units (DMUs) which are mutually comparable – using the same inputs, producing the same outputs, but their performances are different and definition of a DMU is generic and flexible. Based on this approach, it is possible to determine if DMU are efficient or inefficient by the size and quantity of consumed resources by the produced outputs (Andresen and Petersen, 1993). The efficiency score of DMU in the presence of multiple input and output factors is defined by the following equation (1) (Zhu, 2012):

$$\text{efficiency} = \frac{\text{weighted sum of outputs}}{\text{weighted sum of inputs}}. \quad (1)$$

Suppose there are  $n$  DMUs which consume  $m$  inputs to produce  $s$  outputs. If a performance measure (input/output) is added or deleted from consideration, it will influence the relative efficiencies. Empirically, when the number of performance measures is high in comparison with the number of DMUs, then most of DMUs are evaluated efficient. Hence, the obtained results are not reliable. There is a rule of thumb proposed by W. W. Cooper, L. M. Seiford and K. Tone (2007) which expresses the relation between the number of DMUs and the number of performance measures. M. Toloo (2012) checked more than 40 papers that contain practical applications and statistically found out that in nearly all of the cases the number of inputs and outputs do not exceed 6. A simple calculation shows that when  $m \leq 6$  and  $s \leq 6$ , then  $3(m + s) \geq m \times s$ . As a result, in this paper following formula (2) is applied:

$$n \geq 3(m + s). \quad (2)$$

In the paper, this rule is met, i.e. DMUs number is three times higher than sum of input and outputs, i.e.  $83 \geq 3(13 + 13)$ ,  $83 \geq 3 \cdot 26$ ,  $83 \geq 78$ .

For calculations of economic efficiency of EU NUTS 2 regions, we used four selected advanced DEA models with multiple inputs and outputs:

1. *FDH input oriented model*,
2. *FDH output oriented model*,
3. *FRH input oriented model*,
4. *FRH output oriented model*.

Basic DEA models, such as CCR or BCC, compare inputs and outputs of evaluated units (country, region) with a linear (convex) combination of inputs and outputs of other units. This unit is not in most cases assessed to really existing unit, but to a kind of virtual unit, which is a combination of inputs and outputs of existing units. The basic idea of FDH model, which was first formulated by Deprins, Simar and Tulkens (1984), is unconvexity of set of production possibilities. This means that evaluated unit can be only relatively compared towards really existing units. For comparison with CCR and BCC models, it should be added that





limits of efficiency rate is similar to these models, and it depends on model orientation on inputs or outputs. Rate of efficiency, obtained by FDH models, is generally higher than in CCR and BCC models. This is due to the possibility that a production unit is dominated not only by specific production units of set of units (in the case of CCR and BCC models), as well as convex combinations of these units. A simple extension of FDH model is FRH model, which unlike FDH model, allows evaluated unit compares with multiplied combinations of other units.

Assuming 83 EU NUTS 2 regions within evaluated European countries, each with  $m$  inputs and  $r$  outputs, the *relatively efficiency score* of a tested region  $q$  is obtained by solving equations (3)–(6) (Zhu, 2012).

*FDH input oriented model* (with multiple inputs and outputs) is defined as follows (3):

$$\min z = \theta - \varepsilon (\mathbf{e}^T \mathbf{s}^+ + \mathbf{e}^T \mathbf{s}^-), \tag{3}$$

subject to:

$$\mathbf{X}\boldsymbol{\lambda} + \mathbf{s}^- = \theta \mathbf{x}_q,$$

$$\mathbf{Y}\boldsymbol{\lambda} - \mathbf{s}^+ = \mathbf{y}_q,$$

$$\mathbf{e}^T \boldsymbol{\lambda} = 1,$$

$$\mathbf{s}^+, \mathbf{s}^- \geq 0,$$

$$\boldsymbol{\lambda} - \text{binary}.$$

Where  $z$  is the coefficient of efficiency of unit  $U_q$ ;  $\theta$  is required rate of input reduction to achieving the efficient frontier;  $\varepsilon$  represent an infinitesimal constant;  $\mathbf{s}^+$  and  $\mathbf{s}^-$  are vectors of additional variables for inputs and outputs;  $\boldsymbol{\lambda}$  represents vector of weights assigned to individual units,  $\boldsymbol{\lambda} \geq 0, \boldsymbol{\lambda} = (\lambda_1, \lambda_2, \dots, \lambda_n)$ ;  $T$  is monotonicity which means that all inputs and outputs are freely (or strongly) disposable;  $e$  denotes the convex hull;  $e^T$  means convexity what is equivalent to decreasing marginal rates of substitution (between inputs, between outputs and between inputs and outputs);  $e^T \boldsymbol{\lambda}$  is convexity condition according to the nature of returns to scale, i.e. for CRS  $e^T \boldsymbol{\lambda} = \text{arbitrary}$ , for VRS  $e^T \boldsymbol{\lambda} = 1$ ;  $\mathbf{x}_q$  means vector of input of unit  $U_q$ ;  $\mathbf{y}_q$  means vector of output of unit  $U_q$ . By evaluating the unit  $U_q$ , model tries to find virtual unit characterized inputs  $\mathbf{X}\boldsymbol{\lambda}$  and outputs  $\mathbf{Y}\boldsymbol{\lambda}$  which are linear combinations of inputs and outputs of the other units within evaluated sample and which are better (or no worse) than the inputs and outputs of evaluated unit  $U_q$ .

*Convexity* become useful when we wish to extend the scope of the analysis to assessments concerning the degree of inefficiency (using e.g. FDH model), and the shape of the “best-practice” production frontier. Many features such as increasing marginal product of inputs, or indivisibility of inputs and outputs can violate convexity. As Kuosmanen mentioned (2001), convexity holds if the technology is such that substitution of one input combination for a second, keeping output constant, results in a diminishing marginal reduction in the second input combination, or if production activities can be operated side by side (or sequentially) without interfering with each other.

*FDH output oriented model* (with multiple inputs and outputs) is defined as follows (4):

$$\max g = \phi_q + \varepsilon (\mathbf{e}^T \mathbf{s}^+ + \mathbf{e}^T \mathbf{s}^-), \tag{4}$$

subject to:

$$\mathbf{X}\boldsymbol{\lambda} + \mathbf{s}^- = \mathbf{x}_q,$$



$$\mathbf{Y}\boldsymbol{\lambda} - \mathbf{s}^+ = \phi_g \mathbf{y}_q,$$

$$\mathbf{e}^T \boldsymbol{\lambda} = 1,$$

$$\mathbf{s}^+, \mathbf{s}^- \geq 0,$$

$$\boldsymbol{\lambda} - \text{binary},$$

where  $g$  is the coefficient of efficiency of unit  $U_q$ ;  $\phi$  is required rate of output increase to achieving the efficient frontier. Variables in model (4) have the same meaning as in model (3).

*FRH input oriented model* (with multiple inputs and outputs) is defined as follows (5):

$$\min z = \theta - \varepsilon (\mathbf{e}^T \mathbf{s}^+ + \mathbf{e}^T \mathbf{s}^-), \quad (5)$$

subject to:

$$\mathbf{X}\boldsymbol{\lambda} + \mathbf{s}^- = \theta \mathbf{x}_q,$$

$$\mathbf{Y}\boldsymbol{\lambda} - \mathbf{s}^+ = \mathbf{y}_q,$$

$$\mathbf{s}^+, \mathbf{s}^- \geq 0,$$

$$\boldsymbol{\lambda} \geq 0,$$

$$\boldsymbol{\lambda} - \text{integer},$$

where all of the variables in model (5) have the same meaning as in model (3).

*FRH output oriented model* (with multiple inputs and outputs) is defined as follows (6):

$$\max g = \phi_g + \varepsilon (\mathbf{e}^T \mathbf{s}^+ + \mathbf{e}^T \mathbf{s}^-), \quad (6)$$

subject to:

$$\mathbf{X}\boldsymbol{\lambda} + \mathbf{s}^- = \mathbf{x}_q,$$

$$\mathbf{Y}\boldsymbol{\lambda} - \mathbf{s}^+ = \phi_g \mathbf{y}_q,$$

$$\mathbf{s}^+, \mathbf{s}^- \geq 0,$$

$$\boldsymbol{\lambda} \geq 0,$$

$$\boldsymbol{\lambda} - \text{integer},$$

where all of the variables in model (5) have the same meaning as in model (4).

*Units with the coefficient of efficiency equals to one are efficient units (for both types of models). In input oriented models, inefficient units has the coefficient of efficiency lower than 1. In output oriented models, inefficient units has the coefficient of efficiency higher than 1.*



For solution of DEA models we used software tools based on solving linear programming problems, e.g. *Solver in MS Excel*, such as the *DEA Frontier-Microsoft Add In*.

## EVALUATION OF REGIONAL EFFICIENCY IN V4 COUNTRIES, AUSTRIA AND GERMANY BY FDH AND FRH MODELS

The EU makes an effort to restore the foundations of its competitiveness and economic performance through increasing its growth potential. The performance analysis provided by DEA method is used for evaluating regional efficiency with respect to factor endowment of evaluated EU NUTS 2 regions. The initial assumption '*that areas achieving best results in efficiency are areas best at converting inputs into outputs and therefore having the greatest performance and productive potential*' was partly confirmed by analysis as show following evaluation.

The best results are traditionally achieved by economically powerful regions (in most cases) old and also new EU Member States. There regions were *efficient* during the whole referred period, so the resulting efficiency index is equal to 1 in FDH and FRH models. This means that the outputs achieved were greater than those incurred inputs.

*Efficient* V4, Austria and Germany NUTS 2 regions are mentioned by dark grey colour and bold font in Table 2. Group of efficient regions includes the regions of the capital cities of the Czech Republic (*Prague*), Slovakia (*Bratislava Region*), Poland (*Warszawa*), Austria (*Wien*) and Germany (*Berlin*). The socio-economic situation of these regions is significant different from other regions, this fact confirms the combination of the regions to one homogeneous group. This homogenous group of efficient regions includes the regions of capital city *Prague*, *Bratislava Region*, *Wien* and *Berlin*, and after 10 years the capital cities have separated from other regions, this confirms the persistent disparities between metropolitan areas and the rest of regions. There are also other cohesion regions in the Czech Republic – *CZ01 (Prague)* and *CZ02 (Central Bohemia)*. In Poland, the one effective province is region *PL12 (Mazowieckie)*. In Slovakia there is an effective region *SK01 (Bratislava Region)*. In Austria, we have found out three effective regions – *AT13 (Wien)*, *AT21 (Kärnten)* and *AT33 (Tirol)*. In Germany, the group of effective regions confirm of *DE11 (Stuttgart)*, *DE12 (Karlsruhe)*, *DE30 (Berlin)*, *DE50 (Bremen)*, *DE60 (Hamburg)*, *DE71 (Darmstadt)*, *DE80 (Mecklenburg-Vorpommern)*, *DE92 (Hannover)*, *DEA1 (Düsseldorf)*, *DEA2 (Köln)*, *DED2 (Dresden)* and *DEF0 (Schleswig-Holstein)*. The best final position is thus reached by performance of regions with agglomerations of major cities and regions in their surroundings, and big industry cities. These regions, in the frame of our hypothesis, could be regions with the best competitive potential and perspective to further development. The analysis at regional level also showed that *in Hungary we find no region*, which would be classified as an effective during the referred period.

To the group of efficient regions it is possible include also regions which were not *efficient* during the whole referred period, but the resulting efficiency index was equal to 1 in FDH and FRH models in several years in the reference period. These regions are *DE22 (Niederbayern)* in Germany and *AT11 (Burgenland)* in Austria. These regions are mentioned by light grey colour and italics font in Table 2.

The efficient regions are followed by a group of regions which are *slightly inefficient*. These regions do not achieved efficiency equal to 1 in FDH and FRH models, but their efficiency indices reached consistently highly effective values close during the referred period (coloured by light grey colour in Table 2). There are NUTS 2 regions in Poland *PL43 (Lubuskie)* and *PL52 (Opolskie)*, in Austria *AT22 (Steiermark)* at 32 (*Salzburg*). In Germany, *DE13 (Freiburg)*, *DE14 (Tübingen)*, *DE21 (Oberbayern)*, *DE23 (Oberpfalz)*, *DE24 (Oberfranken)*, *DE25 (Mittelfranken)*, *DE26 (Unterfranken)*, *DE91 (Braunschweig)*, *DE93 (Lüneburg)*, *DE94 (Weser-Ems)*, *DEA3 (Münster)*, *DEA4 (Detmold)* and *DEA5 (Arnsberg)* belong to the group of slightly efficient regions.



Other regions are classified as *inefficient* in FDH and FRH, i.e. these regions are considered as non-competitive. *Most inefficient* regions are highlighted by ultra-light grey colour and italics font in Table 2. There is the least efficient NUTS 2 region in Poland, there are the least efficient NUTS 2 provinces *PL21 (Malopolskie)*, *PL31 (Lubelskie)* and *PL32 (Podkarpackie)*.

Table 2 also shows results of individual V<sub>4</sub>, Austria and NUTS 2 regions within selected models in terms of achieved average values of coefficients of efficiency in FDH and FRH models over the period 2000–2010. The overall evaluation of individual V<sub>4</sub> regions shows that the best results, in terms of efficiency in all used DEA models, have reached efficient regions. *These regions:* in the Czech Republic *CZ01 (Prague)* and *CZ02 (Central Bohemia)*, in Poland *PL12 (Mazowieckie)*, in Slovakia *SK01 (Bratislava Region)*, in Austria, *AT13 (Wien)*, *AT21 (Kärnten)* and *AT33 (Tirol)* and in Germany *DE11 (Stuttgart)*, *DE12 (Karlsruhe)*, *DE30 (Berlin)*, *DE50 (Bremen)*, *DE60 (Hamburg)*, *DE71 (Darmstadt)*, *DE80 (Mecklenburg-Vorpommern)*, *DE92 (Hannover)*, *DEA1 (Düsseldorf)*, *DEA2 (Köln)*, *DED2 (Dresden)* and *DEF0 (Schleswig-Holstein)*; *have thus ranked first positions* among all evaluated regions during reference period. *In second place, there is German region DE22 (Niederbayern).* *In third place was Austrian AT11 (Burgenland).*

The best results and also first positions, in the Czech Republic have reached regions *CZ01 (Prague)* and *CZ02 (Central Bohemia)*. The worst results and also last position, in the Czech Republic has reached region *CZ04 (Northwest)*. In Hungary, the best results and also first position, region *HU31 (Észak-Magyarország-Northern Hungary)* has reached. The worst results and also last position, in Hungary has reached region *HU33 (Dél-Alföld- Southern Great Plain)*. The best results and also first position, in Poland has reached region *PL12 (Mazowieckie)*. The worst results and also last position, in Poland has reached region *PL32 (Podkarpackie)*. In Slovakia, the best results and also first position, region *SK01 (Bratislava Region)* has reached. The worst results and also last position, in Slovakia has reached region *SK04 (East Slovakia)*. In Austria, the best results and also first positions have reached regions *AT13 (Wien)*, *AT21 (Kärnten)* and *AT33 (Tirol)*. The worst results and also last position, region *AT12 (Niederösterreich)* has reached in Austria. The best results and also first positions have reached regions *DE11 (Stuttgart)*, *DE12 (Karlsruhe)*, *DE30 (Berlin)*, *DE50 (Bremen)*, *DE60 (Hamburg)*, *DE71 (Darmstadt)*, *DE80 (Mecklenburg-Vorpommern)*, *DE92 (Hannover)*, *DEA1 (Düsseldorf)*, *DEA2 (Köln)*, *DED2 (Dresden)* and *DEF0 (Schleswig-Holstein)* in Germany. The worst results and also last position, region *DED3 (Leipzig)* has reached in Germany.



*Table 2: Comparison of Efficiency Results in selected DEA Models: FDH and FRH for NUTS 2 regions in V4, Austria and Germany*

DEA model	FDH IO	FDH OO	FRH IO	FRH OO	Average CE*
NUTS 2	CE*	CE*	CE*	CE*	
CZ01	1,000	1,000	1,000	1,000	1,000
CZ02	1,000	1,000	1,000	1,000	1,000
CZ03	0,850	1,244	0,853	1,236	1,046
CZ04	0,671	1,625	0,929	1,545	1,193
CZ05	0,867	1,299	0,978	1,218	1,091
CZ06	0,756	1,653	0,835	1,545	1,197
CZ07	0,898	1,247	0,964	1,203	1,078
CZ08	0,860	1,214	0,978	1,187	1,060
HU10	0,866	1,137	0,892	1,118	1,003
HU21	0,765	1,242	0,873	1,221	1,025
HU22	0,834	1,175	0,875	1,148	1,008
HU23	0,701	1,329	0,882	1,267	1,045
HU31	0,868	1,157	0,998	1,059	1,021
HU32	0,673	1,435	0,984	1,077	1,042
HU33	0,634	1,527	0,923	1,299	1,096
PL11	0,664	1,668	0,891	1,623	1,212
PL12	1,000	1,000	1,000	1,000	1,000
PL21	0,591	1,856	0,889	1,826	1,291
PL22	0,681	1,401	0,890	1,414	1,097
PL31	0,467	1,989	0,875	2,228	1,390
PL32	0,576	1,635	0,895	1,732	1,210
PL33	0,681	1,421	0,875	1,452	1,107
PL34	0,679	1,426	0,884	1,445	1,109
PL41	0,775	1,274	0,905	1,315	1,067
PL42	0,836	1,149	0,948	1,168	1,025
PL43	0,999	1,001	1,000	1,000	1,000
PL51	0,889	1,098	0,996	1,023	1,002
PL52	0,973	1,041	0,985	1,032	1,008
PL61	0,838	1,199	0,952	1,174	1,041
PL62	0,801	1,227	0,981	1,211	1,055
PL63	0,842	1,145	0,959	1,136	1,021
SK01	1,000	1,000	1,000	1,000	1,000
SK02	0,855	1,089	0,887	1,562	1,098
SK03	0,813	1,113	0,828	1,099	0,963
SK04	0,701	1,168	0,723	1,147	0,935
AT11	0,999	1,001	1,000	1,000	1,000
AT12	0,934	1,075	0,975	1,048	1,008
AT13	1,000	1,000	1,000	1,000	1,000

DEA model	FDH IO	FDH OO	FRH IO	FRH OO	Average CE*
NUTS 2	CE*	CE*	CE*	CE*	
AT <sub>21</sub>	1,000	1,000	1,000	1,000	1,000
AT <sub>22</sub>	0,973	1,041	0,985	1,032	1,008
AT <sub>31</sub>	0,955	1,025	0,987	1,002	0,992
AT <sub>32</sub>	0,987	1,089	0,995	1,023	1,024
AT <sub>33</sub>	1,000	1,000	1,000	1,000	1,000
AT <sub>34</sub>	0,966	1,037	0,992	1,018	1,003
DE <sub>11</sub>	1,000	1,000	1,000	1,000	1,000
DE <sub>12</sub>	1,000	1,000	1,000	1,000	1,000
DE <sub>13</sub>	0,989	1,075	0,997	1,019	1,020
DE <sub>14</sub>	0,982	1,087	0,996	1,020	1,021
DE <sub>21</sub>	0,972	1,099	0,984	1,069	1,031
DE <sub>22</sub>	0,999	1,001	1,000	1,000	1,000
DE <sub>23</sub>	0,973	1,041	0,985	1,032	1,008
DE <sub>24</sub>	0,987	1,089	0,995	1,023	1,024
DE <sub>25</sub>	0,978	1,039	0,989	1,027	1,008
DE <sub>26</sub>	0,978	1,099	0,980	1,051	1,027
DE <sub>27</sub>	0,898	1,247	0,964	1,203	1,078
DE <sub>30</sub>	1,000	1,000	1,000	1,000	1,000
DE <sub>41</sub>	0,867	1,299	0,978	1,218	1,091
DE <sub>42</sub>	0,855	1,389	0,887	1,362	1,123
DE <sub>50</sub>	1,000	1,000	1,000	1,000	1,000
DE <sub>60</sub>	1,000	1,000	1,000	1,000	1,000
DE <sub>71</sub>	1,000	1,000	1,000	1,000	1,000
DE <sub>72</sub>	0,934	1,075	0,975	1,076	1,015
DE <sub>73</sub>	0,942	1,069	0,981	1,079	1,018
DE <sub>80</sub>	1,000	1,000	1,000	1,000	1,000
DE <sub>91</sub>	0,993	1,013	0,995	1,009	1,003
DE <sub>92</sub>	1,000	1,000	1,000	1,000	1,000
DE <sub>93</sub>	0,978	1,039	0,989	1,027	1,008
DE <sub>94</sub>	0,978	1,099	0,980	1,051	1,027
DEA <sub>1</sub>	1,000	1,000	1,000	1,000	1,000
DEA <sub>2</sub>	1,000	1,000	1,000	1,000	1,000
DEA <sub>3</sub>	0,993	1,013	0,995	1,009	1,003
DEA <sub>4</sub>	0,978	1,039	0,989	1,027	1,008
DEA <sub>5</sub>	0,978	1,099	0,980	1,051	1,027
DEB <sub>1</sub>	0,955	1,115	0,987	1,092	1,037
DEB <sub>2</sub>	0,934	1,075	0,975	1,048	1,008
DEB <sub>3</sub>	0,942	1,069	0,981	1,039	1,008
DEC <sub>0</sub>	0,978	1,099	0,980	1,051	1,027
DED <sub>1</sub>	0,868	1,157	0,898	1,149	1,018



DEA model	FDH IO	FDH OO	FRH IO	FRH OO	Average CE*
NUTS 2	CE*	CE*	CE*	CE*	
DED <sub>2</sub>	1,000	1,000	1,000	1,000	1,000
DED <sub>3</sub>	0,898	1,247	0,964	1,203	1,078
DEE <sub>0</sub>	0,934	1,075	0,975	1,048	1,008
DEF <sub>0</sub>	1,000	1,000	1,000	1,000	1,000
DEG <sub>0</sub>	0,955	1,115	0,987	1,092	1,037

Note: \* Coefficient of efficiency = average efficiency rate of country in period 2000-2010

Source: Own calculation and elaboration, 2015

## CONCLUSION

A European dimension is becoming essential for effective development of smaller or larger NUTS 2 regions. Geographic, demographic and cultural heterogeneity of the EU brings also differences in socio-economic position of Member States, and especially their regions. Different results in economic performance and living standards of the population indicate the status of the competitiveness of country and its regions. Each territory should know were lying its competitive advantages and advantages and try to strengthen its advantages and reduce its disadvantages, i.e. key factors of competitiveness. Among the important driving forces influencing future territorial development are demographic development, economic integration, transport, energy, agriculture and rural development, climate change, further EU enlargements and territorial governance. Current attention is focused on soft factors such as human, cultural and socio-institutional capital, environmental quality, etc.

The aim of this paper was to present efficiency evaluation of V<sub>4</sub> countries, Austria and Germany, and their NUTS 2 regions in the reference period 2000–2010, through specific multicriteria approach – DEA method. The analysis evaluated the degree of relevance of four selected advanced DEA models for measuring regional efficiency. DEA generated relatively *comparable results*, throughout reference period and models. Comparisons can enable NUTS 2 regions to identify their strengths and weaknesses in a European context and to enrich their development strategies, project ideas and cooperation arrangements. In the core of Europe all types of regions are doing well with regard to both restructuring potential and economic situation, indicating a high potential regional competitiveness. The European territorial pattern seems mainly shaped by different national levels. In addition, a substantial difference exists between rural and urban areas. The more urbanised regions have as expected the best potentials for pursuing strategies of innovation and knowledge-economy based on a particularly creative, segment of the competitive society. Some areas more than others may take on the idea of new/creative industries on the one side, or on the other side on the idea of traditional industries, as a motor for economic development and innovation. As development potentials and opportunities and the interplay of development trends and policies differ between areas, there is no one-size-fits-all solution. Each NUTS 2 region must make its own decisions about the right combination of policy objectives in the field of competitiveness that will guide its development.

The results of the empirical analysis could serve as initial and basic assumption for future research in the field of regional resilience and regional ability to respond on crisis, to create anti-crisis strategy, to implement strategic tools and anti-crisis measures. A detailed analysis of the results of inputs and outputs and determining the optimal values of inputs and outputs can lead to much more efficient regions and improving their resilience.



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# Factors Affecting ERP Solution Implementations in SMEs

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## *ABSTRACT*

Enterprise resources planning (ERP) solutions implementation is complex process, that requires substantial resources and efforts, and yet the results are very uncertain. The ERP hype has already reached SMEs, so facts and best practices concerning the strategies, methods and critical success factors can be collected, analysed and evaluated. In the paper SMEs point of view regarding ERP implementation will be researched. The results of our survey in SMEs have shown that SMEs have to pay attention to different critical success factors in different phases of the implementation process. Moreover, there are significant differences in implementation process as opposed to large companies. Case research conducted in SMEs have shown similar results

## INTRODUCTION

Enterprise resource planning (ERP) solutions can improve business operations flow in organization. ERP solutions are designed by principles of best practices, which means, that ERP vendors search for the best organizational business models in a branch and then incorporate that business model in their package. ERP systems require an organization's core business processes to be reengineered in line with those implicit in the software (Davenport, 1999).

Over the past few years, critical success factors (CSF) of ERP implementation have been well studied (Estaves & Pastor, 2001) in large companies, but very little attention has been paid to CSFs of ERP implementation in SMEs. Although they all have the same goal, that is to improve some aspect of the organization, e.g. strategic, organizational, business, management, operational, or IT-infrastructure (Hedman & Borell, 2002), experience show that different CSFs have to be considered when implementing ERP system in large or in SME organization.

After presenting theoretical background to ERP solutions implementation methods and critical success factors connected to ERP solutions implementation, results from a study conducted on the sample of organizations (mainly SMEs) will be presented. Companies which have been included in the research study have implemented Microsoft Dynamics NAV and SAP solutions. CSFs, their importance, and how CFSs influence each other have been researched. In the third part case study of a company which have successfully implemented Microsoft Dynamics NAV and which have redesigned and integrated their processes will be described.

## METHODS AND CRITICAL SUCCESS FACTORS OF ERP IMPLEMENTATION

A review of past research in the area of ERP implementation has revealed that there are different approaches and strategies for ERP implementation. Organizations have to consider different strategies early in the project, because this decision influences all aspects of ERP implementation projects and can ultimately lead to either success or failure.

Shields (2001) for example talks about three stages of ERP project implementation. The first stage consists of pre-project activities including initial commitment. The second stage deals with specific project implementation activities: start, manage, analyze, configure, test, change, support, prepare and go-life. The third stage is focused on post-project activities, which are as important as the first two phases, since we have to perform various activities for further improvement of the adopted system. The fact that each phase includes several activities is a result of aggressive implementation time, set by management. Bancroft, Seip and Sprengel (2001) defined similar but five phases model which consist of following phases: Focus, As-Is Phase, To-Be Phase, Construction and Testing Phase, and Implementation Phase.

Because of high number of failed ERP implementation projects, ERP vendors have developed their own methodologies that best fit their package. Accelerated SAP (ASAP) implementation methodology developed in 1996 (Miller, 1998) is usually used in SAP implementation projects. This methodology promotes project management principles, team members, business process consultants, external consultants and technical areas support. Moreover SAP has provided additional components, tools and accelerators for supporting ASAP implementations. ASAP produces a process-oriented, direct project plan to specifically contributing direction throughout SAP R/3 or SAP ERP implementation. ASAP methodology is composed of roadmap, toolkit, service, and



support and training. The roadmap is a detailed project plan that describes all activities throughout the implementation. Among other it also includes detailed technical guidelines to support technical project management. The ASAP roadmap consists of five phases: Project Preparation, Business Blueprint, Realization, Final Preparation, and Go-live and support.

Similarly, Microsoft has also developed its own methodology for implementing Microsoft Dynamics ERP packages, called Microsoft Dynamics SureStep (Microsoft, 2007). This methodology provides implementers with implementation guidance combined with project management discipline, tools and template sets that enable Diagnostics, Analysis, Deployment, Migration, Configuration and Upgrade. SureStep methodology helps in reducing risk by making implementation projects simpler, faster and more manageable as it unifies project management terminology, tools, roles and streamlines processes and communication among the project stakeholders. The methodology entails a phased approach, the phases are: Diagnostics, Analysis, Design, Development, Deployment and Operation. The methodology emphasises the need for careful project team assembly and definition of members' roles and responsibilities, as well as communication channels.

Experience in the past ERP projects has shown, that there is a great need for a better understanding of what exactly makes the crucial difference between success and failure of such projects. Organizations strive to create conditions, in which they can implement chosen solution in expected time, scope and evaluated costs. In order to do so, organizations should be aware of what are critical success factors (CSF) of ERP implementations (Sternad & Bobek, 2004).

The subject of CSFs in ERP implementations has been widely researched by researchers in the past years (Al-Mashari, Al-Mudimigh and Zairi, 2003; Bradford, and Florin, 2003; Finney and Corbett, 2007; Gargeya and Brady, 2005, Ngai, Law and Wat, 2007; Wang, Shih, Jiang, Klein, 2007). A study of previously published papers that are focused on success factors of ERP implementation has been conducted. Twenty four papers have been reviewed (Sternad & Bobek 2007). Major CSFs mentioned by authors are (Sternad et al. 2009):

- top management support and involvement;
- clear goals, objectives and scope;
- project team competence and organization;
- user training and education;
- business process reengineering;
- change management;
- project management;
- effective communication;
- user involvement;
- data analysis and conversion;
- consultants;
- project champion;



- architecture choice (package selection);
- minimal customization.

Most of above cited research had been conducted in large companies where scope, time and resources of implementation are different as for SMEs. Because of that it is expected that the ranking of importance of CSFs is different depending on the company size. That means that large companies have to dedicate more attention to some CSFs and SMEs to other CSFs. Importance of each CSF also differs depending on the chosen package and implementation methodology used.

## ERP IMPLEMENTATIONS IN SMES

To research importance of CSFs of ERP implementation an empirical study has been conducted. Therefore a web questionnaire with three parts has been designed. In the first part the purpose was to obtain general picture of responded companies (size, branch and implemented modules), the second part refers to the realization of implementation of an ERP solution and the third part refers to research of CSFs which have a major impact during process of implementation of ERP solutions. Web questionnaire has been mailed to 54 companies with an implemented SAP solution and 117 companies with an implemented Microsoft Dynamics NAV solution. There have been 45 responses to the survey questionnaire, which represent 26 percent. Of the 45 answers received, 22 (or 49 percent) belong to SAP solution, and 23 (or 51 percent) belong to Microsoft Dynamics NAV solution (see Table 1). In table 1 it can also be seen that 13 received answers are from small companies (29 percent), 13 answers are from to medium companies (29 percent) and 19 answers are from large companies (42 percent). Because SAP solution is known as ERP solution for large companies and Microsoft Dynamics NAV solution in known as ERP solution for SMEs, it has been checked if there is correlation between them in our data. Therefore it has been found that there is weak positive relationship between solutions and size ( $r = .365$ ,  $p < 0.05$ ). Because observations in this article involve only SMEs, large companies have been excluded from further investigation in this paper.

*Table 1: Distribution of organization size and solution*

	SAP	Microsoft Dynamics NAV	Total
Small companies	1	12	13
Medium companies	5	8	13
Large companies	16	3	19
Total	22	23	45

The SMEs under consideration are for the most part from industry (34.6 percent), followed by retail (23.1 percent) and service (23.1 percent). Most SMEs have three or more modules implemented and most of them plan to implement other modules in the future as well.

Second part of web questionnaire focuses on process of choosing and implementation of a selected ERP solution. On the question what are the reasons of a company to decide to implement ERP solution the most frequent answers are: integrity of a solution, better access to data, modernization of existing business processes with ERP solution, single data entry, incompatibility of previous information systems, demand of owners, better reports, adaptability and flexibility of ERP solution etc.





There are a lot of ERP solutions that could be considered and evaluated during selection process. In fact there are a lot of ERP solutions for most of the processes and functional areas. Because there is not enough time to look at all these solutions in detail before making a decision, the short list of solutions (2 to 4) should be made on preliminary research. On the question which are ERP solutions on the short list, the most frequent answers are: ERP solutions from local vendors, Microsoft Dynamics NAV, SAP and Oracle. It is not surprising that ERP solutions from local vendors is most frequent answer because these solutions are cheaper than Microsoft Dynamics NAV or SAP solutions. But a question has been raised why a particular ERP solution has been chosen and the most frequent answers are: integrity of a selected ERP solution, efficiency and stability operation of an ERP solution, support of an ERP vendor, cost and price of an ERP solution, and requirement of an owner or other business partners (customers, vendors etc.).

Furthermore it has been investigated what share of ERP business processes cover business processes of a company. Four answers have been given to choose from: completely, almost completely, partly or badly. 25 answers have been received where 20 percent say completely, 64 percent say almost completely and 16 percent say partly. Nobody says badly. The next question is which of the following approaches SMEs use for implementation: Big Bang Approach, Phased Approach, Parallel Approach, Process Approach or Hybrid Approach (combination of previously mentioned approaches). Of 25 answers received 40 percent SMEs used Big Bang Approach, 16 percent SMEs used Phased Approach, 20 percent SMEs used Parallel Approach, 8 percent SMEs Process Approach and 16 percent SMEs Hybrid Approach. Correlation between approach and size and between approach and solutions is not significant.

Furthermore the companies have been asked how they have implemented their ERP solution. Three answers have been available: methodology of an ERP vendor, their own methodology or other. Of 24 answers 70.8 percent of companies use the implementation methodology recommended by an ERP vendor and 29.2 percent of companies use their own implementation methodology. Nobody has chosen other.

On the question how much your business processes have to be adopted to business processes of an ERP solution SMEs have been able to choose between: entirely, largely, partly or nothing. 28 percent of SMEs say largely and 72 percent say partly. Entirely and nothing has not been chosen. These results have been expected because the fact that if coverage between existing business processes and business processes of ERP solution is under 60 percent, it is not recommend to choose and implement a particular ERP solution. The correlation between adoption of business processes has been examined with solution, size, branch and number of implemented modules. Correlations with solution and with size have not been found. But moderate relationship ( $r = .4103$ ,  $p < 0.05$ ) has been found with branch of SMEs. It is thought that the reason for that relationship lies in the fact that business processes of singular ERP solutions are covered better for different kinds of branches. So for SAP solutions it is known that they are more often implemented in industry meanwhile the Microsoft Dynamics NAV solutions are more present in service. The hypothesis that there is no relations between business processes and the number of implementation modules has been rejected because the relationship between them ( $r = -.578$ ,  $p < 0.01$ ) has been found.

In the following part of the second part of questionnaire it has been researched how well the implementation has gone through. The first question refers to duration of an implementation process. Available answers are: 3 months or less, between 3 and 6 months, between 6 and 9 months, between 9 and 12 month and one year or more. From table 2 it can be seen that most durations of implementation ERP solutions for SMEs are between 3 months and one year (70.8 percent). There is a positive moderate relationship between the time of implementation and the size of a company ( $r = .518$   $p < 0.01$ ). There is also correlation between the time of implementation and the implementation approach ( $r = .504$ ,  $p < 0.01$ ). This result is expected because different approaches of implementation have different time scopes of implementation planned. In previous page it has been found out that 40 percent of SMEs use Big Bang approach for which it is known that it is the fastest approach because of the rule which says that all modules of ERP solutions must be implemented at the same time and therefore no interfaces between an ERP solution and legacy information systems have been made.



*Table 2: Duration of implementation process of ERP solutions*

Months	Answer	Percent
Under 3	3	12.5
3 - 6	7	29.2
6 - 9	5	20.8
9 - 12	5	20.8
More than 12	4	16.7
<b>Total</b>	<b>24</b>	<b>100</b>

In addition it has been deeper investigated whether the duration of an implementation process lasts longer than it has been planned. Answers yes or no have been available. 8 implementations (33.3%) lasted longer than they have been planned and the reasons for that are: changing scope of implementation, weak knowledge about functionality of ERP solutions, passive collaboration within project team during the analyze phase, key users have been overloaded with daily tasks and they do not have time to participate in the implementation process, etc. The hypothesis has been given that there is no relationship between big problems during an implementation process and degrees of ERP business process covering over business processes of SMEs.

On the question whether scope of expected functionality changes during an implementation, following answers have been available: big decrease, small decrease, no changes, small increase and big increase. Out of 24 answers 20.8 percent have chosen small decrease, 45.8 percent no changes, 20.8 percent small increase and 12.5 percent big increase. Big decrease has not been chosen. Some of the answers why the scope changed are: “during an implementation we found out new functionalities of the ERP solution for which it would be foolish to release it out of the project”; “after analyzing and defining business processes key users understand importance of the ERP solution better and that was leading to the increase in scope”, “bad analysis and defining processes, and bad cooperation with top management”.

Besides scope, real costs of implementation changed from expected have been looked into. Further options have been given to choice: smaller than planned, little smaller than planned, same as planned, little bigger than planned and a lot bigger than planned. Nobody has chosen much smaller from planned and a little smaller from planned, 29.2 percent have chosen the same as planned, 41.7 percent have chosen a little bigger than planned and 29.2 percent have chosen a lot bigger than has been planned. These reasons for extent costs have been pointed out: bigger scope of functionality than planned, more consultants' hours, bigger number of interfaces with other information systems as planned, persistence at adaptation of ERP solutions to existent processes and procedures.

At the end of the second part of the survey it has been asked if any big problems have occurred during an implementation process. Yes or no answers have been available. 33.3 percent have chosen answer yes and 66.7 percent have chosen answers no. On the question why there have been problems during the implementation the most frequent answers are: user resistance for change, bad training and bad user manuals, unsuitable consultants, bad computer literacy, poorly included middle management, the solution has not been tested enough by users, bad defining of business processes etc. No correlation with other questions in these part of questionnaire, except with method of implementation ( $r = .483, p < 0.05$ ), has been found out.

The third part of the survey has been designed to study importance of CSFs in SMEs. Respondents have been asked to rank fifteen of the most important CSFs of ERP implementation listed in previous chapter in accordance to their importance. CSF effective communication has been divided on two CSFs, the first is communication between a project team and an organization and the second is communication within a project team. Number 1 stands for the most important factor to the number 15 which stands for the least important factor. In total, 31 answers have been received, which represent 65 percent of responded SMEs. The results of CSF survey are presented by following arithmetic means (MCSF X) where number 1 is the most important factor (has the smallest arithmetic mean):



1. clear goals, objectives and scope ( $M_{CSF_1} = 2.59$ );
2. project team competence and organization ( $M_{CSF_4} = 5.88$ )
3. top management support and involvement ( $M_{CSF_2} = 6.35$ )
4. user involvement ( $M_{CSF_9} = 6.94$ )
5. communication between project team and organization ( $M_{CSF_6} = 7.18$ )
6. user training and education ( $M_{CSF_{10}} = 7.59$ )
7. communication within project team ( $M_{CSF_7} = 7.71$ )
8. business process reengineering (BPB) ( $M_{CSF_{12}} = 8.12$ )
9. data analysis and conversion ( $M_{CSF_{15}} = 9.12$ )
10. project champion ( $M_{CSF_3} = 9.25$ )
11. minimal customization ( $M_{CSF_{14}} = 9.44$ )
12. consultants ( $M_{CSF_8} = 9.56$ )
13. project management ( $M_{CSF_5} = 10.47$ )
14. change management ( $M_{CSF_{11}} = 11.13$ )
15. architecture choice (package selection) ( $M_{CSF_{13}} = 11.75$ )

A comparison of ranking list of CSFs between findings published by other authors and the conducted survey on the sample of SMEs is presented in table 3. From the table 3 it can be seen that those very important CSFs in both are: clear goals, objectives, scope and planning; project team competence and organization, and top management support and involvement. In the table 3, thick line divides upper and lower part of the table. A correlation between ranking list of survey and ranking list of literature has been explored. High statistical correlation at the 0.01 level ( $r = .674$ ) exists between them.



*Table 3: Comparison of ranking list CSFs between the literature and the survey*

		Literature*	Survey
CSF <sub>1</sub>	clear goals, objectives and scope	2	1
CSF <sub>4</sub>	project team competence and organization	3	2
CSF <sub>2</sub>	top management support and involvement	1	3
CSF <sub>9</sub>	user involvement	8	4
CSF <sub>6</sub>	communication within project team*	8	5
CSF <sub>10</sub>	user training and education	4	6
CSF <sub>7</sub>	communication between project team and organization*	8	7
CSF <sub>12</sub>	business process reengineering	5	8
CSF <sub>15</sub>	data analysis and conversion	8	9
CSF <sub>3</sub>	project champion	12	10
CSF <sub>14</sub>	minimal customization	12	11
CSF <sub>8</sub>	consultants	12	12
CSF <sub>5</sub>	project management	6	13
CSF <sub>11</sub>	change management	6	14
CSF <sub>13</sub>	architecture choice (package selection)	12	15

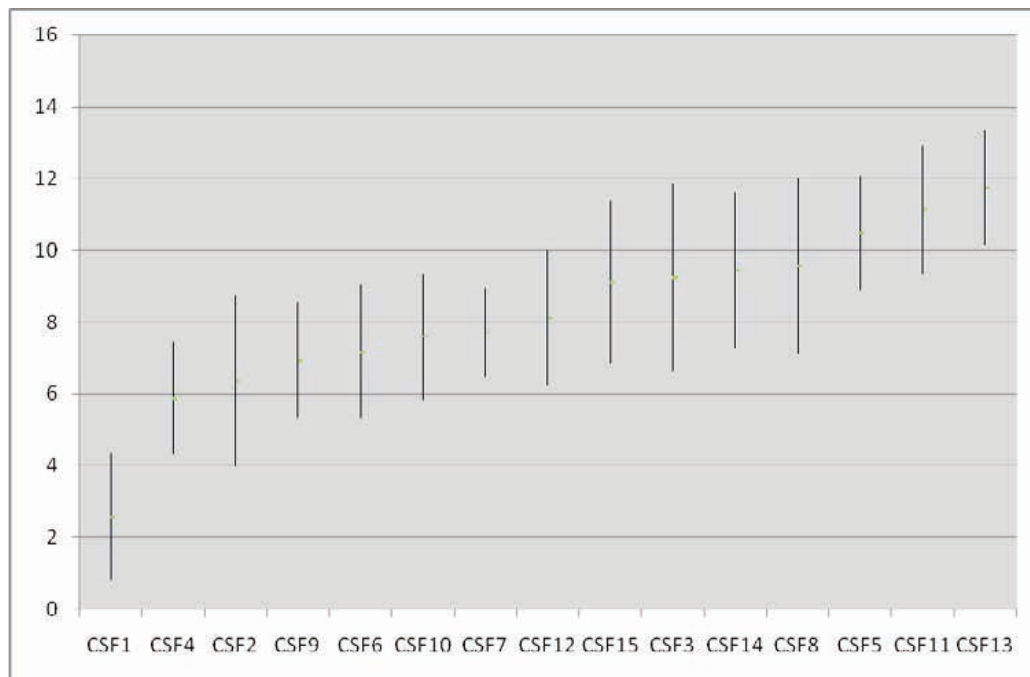
\*If the some number occurs in literature more times, it means that it has been equally important by the authors.

In the ranking list of the literature at the beginning of the paper (also seen in the second column of table 3) there are more CSFs with the same number in brackets which represent number of authors, who mentioned these CSF. It can be presumed that there are more groups of CSFs which have the same importance. Rank of individual CSFs and variation rank between answers of SMEs have been calculated regarding a place of their standard means. Fifteen CSFs have been put in four groups. Inside each group there are no distinctive differences between CSF ranks. The first group consist of only one factor which is clear goals, objectives and scope (CSF<sub>1</sub>). In second group there are following factors considered: project team competence and organization (CSF<sub>4</sub>), top management support and involvement (CSF<sub>2</sub>), user involvement (CFS<sub>9</sub>), communication within project team (CFS<sub>6</sub>), user training and education (CFS<sub>10</sub>) and communication between project team and organization (CFS<sub>7</sub>). In the third group of equally important CSFs are: business process reengineering (CSF<sub>12</sub>), data analysis and conversion (CSF<sub>15</sub>), project champion (CSF<sub>3</sub>), minimal customization (CSF<sub>14</sub>) and consultants (CSF<sub>8</sub>).

The last and the least important group of equally important CSFs consist of: project management (CSF<sub>5</sub>), change management (CSF<sub>11</sub>) and architecture choice (CSF<sub>13</sub>). Rank of individual CSFs and variation rank between answers of SMEs have been presented in figure 1.



Figure 1: CSFs presented by standard means and variation rank between answers



Correlation between single CSFs in the survey has also been examined and it can be seen that:

- strong positive correlation at 0.01 level is between:
  - clear goals, objectives and scope (CSF<sub>1</sub>) and change management (CSF<sub>11</sub>) ( $r = .715$ )
  - project team competence and organization (CSF<sub>4</sub>) and effective communication within project team (CSF<sub>6</sub>) ( $r = .654$ )
  - communication between project team and organization (CSF<sub>7</sub>) and architecture choice (package selection) (CSF<sub>13</sub>) ( $r = .596$ )
- moderate positive correlation at 0.05 level is between:
  - top management support and involvement (CSF<sub>2</sub>) and project champion (CSF<sub>3</sub>) ( $r = .479$ )
  - top management support and involvement (CSF<sub>2</sub>) and project team competence and organization (CSF<sub>4</sub>) ( $r = .432$ )
  - project team competence and organization (CSF<sub>2</sub>) and project management (CSF<sub>5</sub>) ( $r = .555$ )
  - communication within project team (CSF<sub>6</sub>) and communication between project team and organization (CSF<sub>7</sub>) ( $r = .496$ )
  - communication between project team and organization (CSF<sub>7</sub>) and data analysis and conversion (CSF<sub>15</sub>) ( $r = .437$ )

- business process reengineering (BPB) (CSF<sub>12</sub>) and change management (CSF<sub>11</sub>) ( $r = .428$ )
- moderate negative correlation at 0.05 level is between:
  - clear goals, objectives and scope (CSF<sub>1</sub>) and consultants (CSF<sub>8</sub>) ( $r = -.526$ )
  - clear goals, objectives and scope (CSF<sub>1</sub>) and minimal customization (CSF<sub>14</sub>) ( $r = -.546$ )
  - top management support and involvement (CSF<sub>2</sub>) and communication between project team and organization (CSF<sub>7</sub>) ( $r = -.413$ )
  - top management support and involvement (CSF<sub>2</sub>) and user training and education (CSF<sub>10</sub>) ( $r = -.449$ )
  - communication within project team (CSF<sub>6</sub>) and minimal customization (CSF<sub>14</sub>) ( $r = -.482$ )
  - change management (CSF<sub>11</sub>) and minimal customization (CSF<sub>14</sub>) ( $r = -.440$ )

The results of this survey have shown that CSFs have an important role in implementation process of ERP solution implementation in SMEs. On this basis the importance of CSFs have been additionally researched with several case researches in several companies that implemented ERP solution have been conducted and one case research is shortly described below.

## MANAGING AN ERP IMPLEMENTATION IN A SMALL, BUT FAST GROWING COMPANY

SME researched as case research was a company specialized in stainless steel wholesale. At the beginning of the project its annual turnover was 7 million EUR and it had 23 full time employees. The company also engages in manufacturing to the extent of providing services of cutting, curving, welding to customer specification. The company operates in two EU countries.

When company decided to embark on the project of “renovating” its ERP system, it had in fact already outgrown its current system which effectively consisted of two separate applications – one covered finance, while the other covered the material handling. The two systems were consolidated almost entirely manually and held in line by two key persons. Although processes and records were in place to cover the main business process of stainless steel wholesale and additional services of minor processing of this steel, most of the employees in purchase, sales and manufacturing depended on their islands of manual records and unstructured exchange of information. On top of wholesale and small-scale simple manufacturing, the company also planned to embark on a form of retail sale of stainless steel items, which amounted to over-the-counter sales of small quantities of items. Obviously, it was in the interest of the company, to keep investment value and TCO in check.

The implementer was a local Microsoft Dynamics partner, whose operations include development of independent specialized solutions for financial and telecommunication companies. The implementer tried to limit the range of functionality as well as extent of customization and new development. At the same time, both were aware that the solution needed to provide the customer with a system that would not only cover the company’s current needs but also support and fuel its further development and growth. In addition, the project team faced two more challenges.



Firstly, the implementation of a contemporary integrated comprehensive ERP system (Microsoft Dynamics NAV) meant a new concept, record and process model for the company. For example, the creation and posting of a sales order and from it a shipment note and invoice could effectively be done in the sales department directly thus immediately influencing the stock, customer ledger, payables and general ledger records. While the new system would streamline processes and reduce the potential for errors due to multiple data inputs, it would also transfer a lot of the responsibility to other employees.

Secondly, in SMEs, employees tend to cover multiple roles and responsibilities in the organization and processes. Such companies tend not to have free resources for internal projects and/or reorganization as they devote all their effort to the core business. In addition, the IT department does not exist, is outsourced or is represented by a single person with generalist knowledge.

The first compromise company made was the choice of product – Microsoft Dynamics NAV may have been more expensive than local products and providers in terms of license and implementation services, but it offered a wide range of well tested functionality company needed (accounting, sales, purchase, inventory, basic manufacturing). The license modularity and licensing by user meant at least the license part of the project investment value could be approached on the pay-as-you-grow basis.

The next step was reaching the right balance between company adapting to Microsoft Dynamics NAV built-in process model and business logic and vice-versa. In fact, the company and the implementer agreed on adhering to almost completely standard functionality in the domain of finance, accounting and inventory. On the other hand, most of the customization and modification was made in the areas where company derived its market comparative advantage from – sales (particularly quotes, pricelists, etc.), manufacturing, purchase (rules for replenishing stock, inventory turnover). These areas were also the ones where most changes have been made also after the initial deployment, as the company evolved and grew.

The business process change brought on by the implementation of an integrated system into a company, which had previously consisted of information islands, proved the most difficult challenge to overcome. This was offset by interim organization and process changes – some records were initially double checked and manually posted by key users to avoid errors. With some additional and repeated user trainings provided by internal key users and the implementer, the new concepts and advantages of the system were eventually adopted and even welcomed by the end users.

Project management/ownership challenge proved to be relatively simple to overcome, made possible by strong support and involvement of the sponsor – the owner and manager of the company. The absence of a dedicated business system manager was offset by appointing different heads at different stages of the project – the first stage focused primarily on the sales and purchase and was managed by head of sales. The later stages focused on enhancing the first-implemented standard functionality in inventory and manufacturing. By commencement of that stage, the company had grown to the point where it needed a dedicated post to manage those areas of operation – this person consequently also managed the respective stage of the implementation. On the other hand, the fact that the financial/accounting area had previously been covered by an almost completely separate but entirely standard system had made it possible to implement it simultaneously in the first stage.

Three years of full operation after go-live with the new system, the company turnover has tripled to 22 million EUR, while the number of full time employees has doubled to 49.



## CONCLUSION

To be successful with ERP implementation a SME has to take in account the implementation strategy, implementation method (implementation process) and implementation CSFs. A lot of ERP implementations are failures, because companies which bought ERP solutions think that ERP implementation is a technological and not management issue. Failures in ERP implementation showed that management issues are underestimated. Because of that it is very important that organizations have to create overall conditions in which they can implement chosen solution in expected time, scope and evaluated costs. That means that organizations should be aware of which are most critical success factors (CSFs) of ERP implementations. Prior studies conducted by several researchers reported a set of CSFs among which 19 are refereed by more than one researcher. The paper points out correlation between CSFs in SMEs of our findings to prior published researches. The most important factors regarding SMEs are: clear goals, objectives, scope and planning; project team competence and organization and top management support and involvement.

Our findings have also been confirmed through the several case studies that have been conducted in connection to the field survey. Though every single ERP implementation is different, it has been found that there are some CSFs that are more important than others and these CSFs are the ones that should be given special attention during the implementation process.



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# Age Management and Leadership Style

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## IZVLEČEK

Prebivalstvo Slovenije kot tudi ostalih evropskih držav se stara, saj narašča število starejših ljudi, katerih način in kakovost življenja postajata družbeno pomembna. Generacija številčnih ljudi, rojenih po vojni, se počasi upokojuje in ocenjuje se, da bo do leta 2020 tretjina populacije Evropske unije upokojena. S posledicami staranja družbe se spopadajo tudi organizacije, saj se tudi povprečna starost zaposlenih povečuje.

Dejstvo je, da se z leti fizično in psihično stanje ljudi (kot zaposlenih) slabša, kljub temu pa se nekatere druge funkcije z leti izboljšujejo. To potrjujejo raziskave s sledečimi izsledki: starejši zaposleni (1) so bolj predani delu in vključeni vanj, (2) so redkeje odsotni z dela zaradi zdravstvenih razlogov, (3) so zvesti delodajalcu, (4) imajo bogate delovne izkušnje idr. Glede na to, da narašča pomen mehkih veščin in pozitivne vloge v poslovanju podjetja ter upravljanju življenja, je lahko starost prednost. Znanje in spretnosti, izkušnje in zrelost starejših zaposlenih lahko odtehtajo morebitne zdravstvene težave, ki so posledica staranja.

Čeprav bi ravnanje s starejšimi pri delu v slovenskih organizacijah moralo biti že uveljavljeno področje, le 10% podjetij razmišlja o uvedbi posebnih programov za starejše zaposlene (Dimovski in Žnidaršič, 2008 in 2014; Zupančič, 2012). Prav tako pa je dejstvo, da se v Sloveniji menedžerji prepogosto ne zavedajo, da so nove oblike aktivnega staranja lahko podjetniške priložnosti. Največja težava je sprememba miselnosti in odprava zakoreninjenih mitov o staranju; gre za inovacijo vrednot, enega od 52 tipov inovacij (Štrukelj, 2015).

S pojmom starost in starejši so povezani številni stereotipi. Tako tudi veliko managerjev in podjetnikov žal še vedno razmišlja stereotipno in ne prepozna prednosti sožitja mladih in starejših v podjetju. Pogosto je v ozadju razmišljanje, da so starejši zaposleni za delodajalce večinoma nepriljavni, ker so manj prilagodljivi, sposobni in motivirani za nadaljnji razvoj, postajajo pa tudi manj produktivni in dražji.

Da bi starejši zaposleni ne bili zgolj strošek, ampak bi pomembno prispevali k ustvarjanju dodane vrednosti, lahko v največji meri prispevajo prav podjetja/organizacije z ravnanjem s starejšimi pri delu (age managementom), zlasti z izvajanjem strategije aktivnega staranja kot sestavnega dela strategije menedžmenta človeških virov kot dela strategije organizacije. Posebej pomemben pa je stil vodenja, ki ga menedžerji uporabljajo v vsakodnevni praksi, saj je temelj vseh aktivnosti upravljanja starejših pri delu (podrobnejše informacije so v: Šarotar Žižek et al, 2015a, b, c, d). Ustrezen stil vodenja, kot je npr. teorija izmenjave med vodji in sodelavci, transformacijsko vodenje, na zdravje usmerjeno vodenje, top menedžmentsko vodenje je temelj pozitivne klime, upravljanja konfliktov, upravljanja raznolikosti zaposlenih, timskega dela itn.

*Ključne besede: zaposleni, staranje, ravnanje s starejšimi pri delu, vodenje, stil vodenja*

### *ABSTRACT*

Population in Slovenia as well as in other European countries is aging, because of increasing number of older people whose way of life and its quality are becoming socially important. The baby-boom generation born after the World War II is slowly retiring, and it is estimated that by 2020 a third of the population of the European Union will be retired. The organizations are facing with the consequences of an aging society and the increased average age of their employees.

The fact is that aging causes the deteriorating physical or mental condition of people (including employees); however, some other features are improving with age. This is confirmed by studies with the following findings: older employees are (1) more engaged and involved in work, (2) less frequently absent from work due to health reasons, (3) faithful to the employer, (4) very work-experienced, etc. Given the increasing importance of the soft skills and their positive role in the company's operations and life management, the higher age can be an advantage. The skills, experience and maturity of older employees may outweigh any health problems resulting from aging.

Although the treatment of older people at work in Slovenian organizations should be already an established area, only 10% of companies are considering setting up specific programs for older workers (Dimovski and Žnidaršič, 2008 and 2014; Zupančič 2012). It is also the fact that in Slovenia, managers often do not realize that new forms of active aging can bring business opportunities. The biggest problem is the change of mentality and the elimination of deeply rooted myths about aging. The point is in innovation of values (Štrukelj, 2015).

The two concepts of age and elderly are associated with many stereotypes. Unfortunately many managers and entrepreneurs are still thinking stereotypically and do not recognize the advantages of co-existence of younger and older people in the company. It is often in the background thinking that older employees are generally unattractive for employers because they are less flexible, capable and motivated for further development and they are also becoming less productive and more expensive.

The older employees are not only a cost for employers, but can significantly contribute to the creation of the added value; this can be the greatest contribution to the company with the Age Management concept and by its implementation of its active aging strategy as an integral part of its Human Resources Management Strategy as a part of its Business Strategy. Especially important are the leadership styles that managers use in everyday practice, because they generate the foundations of all management activities of older people on job (for some related details see: Šarotar Žižek et al, 2015a, b, c, d). An appropriate leadership style, such as Leader-member-exchange theory (LMX), Transformational leadership (TFL), Health-focused leadership (HFL), and Top management leadership, is the foundation of a positive climate, conflict management, diversity management staff, teamwork, etc.

*Keywords: employees, aging, age management (AM), leadership, leadership style (LS)*



## INTRODUCTION

Life is longer, older persons (including employees) are healthier, but the older employees retire, once they meet retirement criteria: early, if retirement criteria are low.

Older coworkers have specific attributes and needs, which brings to managers new challenges about how to manage their long employment, with quality and creativity etc. Ilmarinen (2001, 2004) indicates that Age Management (AM) essentially contribute to organizations' effectiveness, but is difficult to introduce (Mykletun in Furunes, 2009).

Researches prove that aging makes soft skills and their importance and positive role in enterprise's business grow (AGE Concern, 2004). On the other hand, experiences show that the older employees, having a longer employment period, bring additional knowledge, experiences and capabilities (Naegel & Walker, 2006; Beaver & Hutchings, 2005).

Zupančič (2012) exposed the following: »Despite the fact that Slovenia experienced an average overall employment rate in recent years in comparison with the EU (68,4 %, EU-27 68,6 % in 2011) and an above average employment rate of women (64,8 %, EU-27 62,3 in 2011), the overall employment rate of elderly in the age group 55-64 remains weak (31,2 %, EU-27 47,4 % in 2011), even more so in the case of women participation in the labour market (22,7 %). On the contrary, data show relatively high labour activity of 'silver' workers in age group 65-74, what offers further reflections on activity drivers«.

Data shows that Slovenia is ageing fast. Zupančič (2012) mentioned that according to the medium variant of EUROPOP2008 population projections for Slovenia, by 2060 the share of people aged 65+ is expected to increase by more than 16 percentage points (to 33.4%). »The share of people aged 80+ is expected to increase to 14.1% (in 2008 the share was 3,5%). In Slovenia in 2060 the population is projected to drop by 12.1% in comparison to 2008, when there are 20,000 people were 2 million. By 2035, Slovenia's population is projected to decrease by 1.5% to 1,992,000, and by 2060 to 1,779,000« (SORS, 2012; summarized after Zupančič, 2012).

Older employees are a fact for Slovenian and also others employers. Hence, employers must care for safer and healthier work to let employees remain capable also in the end phase of their active work, and enable lifelong learning for workers to be able to follow changes in their work process and new technologies. The new leadership style (LS) based also on social responsibility (SR) includes specific programs, techniques, tools, etc. Indirectly it covers prevention activities with which the younger ones will be enabled to work also in their decade before retirement.

Age management is compatible with social responsibility (SR) trends since:

- It is organizations' responsibility for their impacts on society based on (1) interdependence and (2) holism;
- It considers SR's 7 topics: organizational governance, human rights, labor practices, environment, fair operating practices, consumer issues, and community involvement and development, by using the fact that;
- It is based on the 7 SR principles: accountability, transparency, ethical behavior, respect for the rule of law, stakeholders' interest, international norms of behavior and human rights, and
- It is in accordance with EU's efforts that member countries are role models of SR, also for economic reasons the way out from the current crisis.

Importance of LS in Slovenia was researched in 2008 by Kapitalska družba (Dimovski in Žnidaršič, 2008): only 10% of enterprises think about introducing special programs for older employees, while 86% do not at all. (Hopefully, it is better now, after 7 years, but we detected no new data.) This might be due to finding older employees mostly unattractive for employers as too



poorly trained for their jobs, less adaptable, capable and motivated for further development, less creative, motivated and full of initiatives, ambitious and healthy; the older workers oppose changes, face stress situations with more difficulty, like less the new technologies, using computers and foreign languages (Branine & Glover, 1997; Mandl, Dorr & Oberholzner, 2006). They are becoming less productive and more expensive (Brooke, 2003).

The aim of our paper is to contribute to development of new LS for AM for Slovenia. This is very important because age management in Slovenia is not well developed. Zupančič (2012) mentioned that neither most firms (especially SME) reflect about more ageing friendly environment despite shrinking working force in the near future nor individuals mostly possess enough self-esteem to feel competent for further work or up-grading skills.

Requisitely holistic findings on LS innovation can essentially contribute to the degree of labor activity, higher innovativeness, rationality and work productivity, and hence to better success of the Slovene economy/society.

We researched with qualitative methods such as: the descriptive and historical method, the compilation method, the method of deduction and induction the following research question: Does AM require a specific LS? Research hypothesis was: AM must be developed and implemented with a speci LS.

## EMPLOYEES AND AGE

The important topic of our research is age of employees, which is in the *Merriam-Webster encyclopedia* described, as “the length of time that a person has lived or a thing has existed” (Merriam-Webster, 2014).

According to a well-known definition of AM by Juhani Ilmarinen, AM can be described as follows: »Consideration of age related factors affecting both white and blue collar employees in the daily management design and organization of individual work tasks, as well as the work environment, so that everybody, regardless of age, feels empowered to reach both personal and corporate goals.» (Ilmarinen 2006).

It is important that the companies have human resource management (HRM) with personnel policy that is life cycle oriented, and that this policy is strategically adapted to the needs of employees. At IBM (Lesonsky, 2011), a Generational Diversity program assesses employees’ career “life cycles” and the different needs the person may have at all stages of their career.

Gender diversity is therefore vital to any workplace and not just because it is a laudable goal, but it simply makes bottom-line business sense.

Tackling the organization with the key consequences of an aging society will have a significant impact on the success of their management of human resources and thus the operation of the organization as a whole. If the organizations want to cope with the decreasing working population and age diversity of employees, they have to address three key challenges: 1) how and how long to maintain the quality of the activity of older employees, 2) how to attract and maintain the organization’s younger employees, and 3) how to develop and maintain successful intergenerational management.

Gallup (2015) finds that it is important to remember that every employee is an individual and must be engaged individually. But there are key characteristics that distinguish workers in each generation, and companies must be aware of them when planning strategies to engage and retain their best contributors in all generations.





For humans such as Millennials, Generation Xers, and Baby Boomers, Gallup's research shows that focusing on giving employees opportunities to do what they do best and helping them connect to the mission and purpose of their company are the strongest factors for boosting retention. Gallup (Rigoni, 2014) finds that about one in two Baby Boomers intend to delay their retirement, meaning they are likely to remain an influential part of the workforce in the years ahead. Therefore it is important that the companies take these surplus years into account by ensuring that boomers have more targeted opportunities where they can use their innate talents and accumulated expertise to achieve their full potential at work. Many researches have shown that companies, which are able to use this strength can achieve higher performance outcomes, including greater productivity and profitability and lower turnover.

Gallup (2015) research proves that people succeed when they focus on what they do best. When they identify their talents and develop them into strengths, people are more productive, perform better, and are more engaged.

Gallup's Clifton Strengths Finder (Gallup, 2015) assessment tests for 34 specific strengths and identifies each individual's top five strengths; it has pointed out that the most common strengths in the Strengths Finder database differ slightly by generation.

While certain strengths overlap among these generational profiles, the Developer strength stands out as uniquely powerful among the baby boomers who have taken the assessment. People high in the Developer strength are adept at recognizing and cultivating potential in others. They excel at monitoring signs of improved performance and find personal satisfaction in helping others succeed.

*Table 1: Top Five Strengths, by Generation*

	<b>Millennials</b>	<b>Generation X</b>	<b>Baby Boomers</b>	<b>Traditionalist</b>
1.	Adaptability	Input	Responsibility	Responsibility
2.	Input	Achiever	Achiever	Harmony
3.	Responsibility	Responsibility	Adaptability	Empathy
4.	Achiever	Learner	Developer	Consistency
5.	Context	Relator	Empathy	Achiever

Source: Gallup (2000)

Baby boomers have the prevalent talent for developing others and would have the potential to bring even more value to their workplaces, if they had more opportunities to use their strengths. They can be mentors, trainers, managers, and leaders, and with their wealth of work and life experiences, baby boomers would seem ideally suited to assume these roles at this point in their careers. This does not necessarily mean that every boomer has strong Developer talents and should automatically be promoted to management. Rather, companies should make an effort to identify and learn more about boomers' individual strengths and position them in mentoring roles where they can easily share their expertise. Once they have the opportunity to fully develop their strengths, they can act as catalysts in helping younger workers reach their potential.

## INTERGENERATIONAL ENVIRONMENT

The average age of population is increasing in EU. According to the Population Forecast (Statistics of Finland, years 2009-2060) the portion of 65+ years old people will increase from 17 percent to 27 percent by 2040 and to 29 percent by 2060. The part of working aged population (15-64 years) will decrease from current 66 percent to 58 percent by 2040 and to 56 percent by 2060. The amount of working aged people started to decrease in 2010 when the big generations started to retire (Gallup, 2015).

An ideal working environment is there where everyone, no matter which generation an employee belongs to, can bring out their best qualities to boost productivity and foster creativity of the team and the company. So how can we build an intergenerational environment that works?

Significant elements for creating an intergenerational environment that works include (WSJ, 2009):

- Mentoring,
- Leadership - a clearly defined leadership structure meets the needs of all generations,
- Flexibility,
- Communication - flexible communication because each generation has different communication preferences. Give all employees a way of being heard, regardless of age,
- Fairness,
- Nurturing positive and respectful relationships,
- Allowing for different learning styles,
- Keeping the employees engaged,
- Encouraging the teamwork,
- Reviewing the rules,
- Recognizing the high performance,
- No blaming of everything on generational differences.

European Centre for the Development of Vocational Training prepared Guidance in employers' age management strategies and an overview of the effects of age management that are presented in Figure 1 (CEDEFOP 2015).



Figure 1: Overview of the effects of age management



Source: CEDEFOP 2015.

The organization must be aware that with the leaving of older employees outside the company because they are not properly valued, the organization loses valuable institutional knowledge. Therefore the organizations have to ensure that their older employees perceive that their contributions are valued and therefore they feel engaged rather than pushed aside by their younger team members.

## LEADERSHIP IN CONNECTION TO AGE MANAGEMENT

Managers are increasingly grappling with generational differences in their work forces. Problems can arise from differing mindsets and communication styles of workers born in different eras. The frictions may be aggravated by new technology and work patterns that mix workers of different ages in ever-changing teams.

Baby Boomers, born between 1946 and 1964, are competitive and think workers should pay their dues, workplace consultants say. Gen Xers, born between 1965 and 1977, are more likely to be skeptical and independent-minded. Gen Ys—also known as Millennials—were born in 1978 or later and like teamwork, feedback and technology.

The key is to be able to effectively address and take advantage of the differences in values and expectations of each generation. But experts say managers must be careful not to follow blanket stereotypes. Managers must also take care not to disadvantage older workers, even inadvertently; otherwise they risk retention problems and legal headaches. (WSJ, 2009)



For our research, leadership is important as the most widely researched topic in organizational behavior. Yukl (2012, p. 66) summarized the essence of leadership in organizations as “influencing and facilitating individual and collective efforts to accomplish shared objectives.” Ciulla et al., (2013: xxvii) mentioned that a normative model or leadership theory consists of explicit moral norms for analyzing leaders and leadership. Such normative models are (Ciulla et al 2013: p. xxviii):

- Servant leadership,
- Transformational leadership,
- Authentic leadership,
- Ethical leadership,
- Responsible leadership and
- Spiritual leadership.

In connection to age management, which is a part of diversity management leaders are expected to play a key role (Kulik, 2014) (based on prior research and for the sake of readability, we use the terms leader, supervisor, and manager synonymously). Yukl (2006, 2012) mentioned that leaders engage in a broad range of behaviors, including task-oriented activities (e.g., developing plans, monitoring progress), relations-oriented activities (e.g., supporting, developing, and empowering employees), change-oriented activities (e.g., encouraging innovation, facilitating learning and communication), as well as externally-oriented activities (e.g., networking, boundary spanning). Leaders must promote diversity of workforce. So they might implement diversity-friendly HR practices within their own departments or encourage their direct reports to take part in centrally offered diversity training (Breugh & Frye, 2008). Leaders might or might not hold stereotypes against certain demographic groups (such as elderly employees), act as multipliers, and provide a positive or negative role model, especially if they belong to higher organizational echelons (Kunze et al., 2013).

We mentioned multiple channels of influence and the “important responsibility that leaders have to shape intragroup processes and outcomes associated with diversity” (Nishii & Mayer, 2009, p. 1412), but empirical research on the role of leadership in the effective management of diversity is scarce. Therefore Boehm and Dwertmann (2015, P. 47) analyze the potential impact of four distinct leadership approaches on age and disability diversity:

- Leader-member-exchange theory (LMX),
- Transformational leadership (TFL),
- Health-focused leadership (HFL), and
- Top management leadership.

LMX theory proposes that supervisors develop different levels of exchange relationships with their coworkers (Sparrowe & Liden, 1997), ranging from close, trusting, and reciprocal high-quality relationships to more exchange-based and formalized low-quality relationships (Gerstner & Day, 1997; Graen & Uhl-Bien, 1995; Wayne, Shore, & Liden, 1997). We propose that successful leadership for age- and disability-diverse units is characterized by a high LMX mean as well as a low LMX differentiation (Nishii and Mayer 2009). In connection with that Boehm and Dwertmann (2015, p. 48) proposed as follows:

- »LMX relationships characterized by a high LMX mean and a low LMX differentiation between the supervisor and his/her followers positively affect the age/disability diversity«;



- »Age- and disability-diverse units in which the quality of the LMX relationship between the supervisor and his/her followers is independent of demographic similarity show higher performance than teams in which the quality of LMX relationships is correlated with demographic similarity of the dyad«.

Van Knippenberg & Sitkin (2013) mentioned that the transformational leadership is often defined in terms of its potential effects on individuals and social entities. It is about pride, trust, and respect, inspiring innovation and thinking, shifting motivation from self-interest to collective interest, including higher order needs, and thus enabling followers to perform beyond expectations. Transformational leaders engage in modeling of idealized influence behaviors, provide inspirational motivation through a compelling vision, ensure intellectual stimulation, challenge the status quo, and show individualized consideration through coaching and developmental activities (Avolio & Bass, 2004; Bass, 1985; Bass & Riggio, 2006). In connection with that Boehm and Dwertmann (2015, p. 49) proposed as follows:

- »The relationship between age/disability diversity and performance is more positive under conditions of high TFL behaviors demonstrated by the supervisor« and
- »In particular, the TFL subdimensions, which focus on the collective (i.e., idealized influence and inspirational motivation) enhance the age and disability diversity-performance relationship«.

For managing elderly employees at work HFL is very important. HFL is a supervisor behavior targeted at protecting and restoring employee health because it brings positive health outcomes (Boehm and Dwertmann 2015, p. 49). Barling, Loughlin & Kelloway (2002) mentioned that the idea of leader engagement in a particular field is referred to as domain-specific leadership and was introduced for safety-specific leadership. Boehm and Dwertmann (2015, p. 49) proposed in connection with HFL as follows: »The relationship between age/disability diversity and performance is more positive under conditions of high HFL behaviors demonstrated by the supervisor«.

We must mention also the Top management leadership, because top managers are “responsible for the strategic and organizational decisions that affect the direction, operations, and performance of the company as a whole” (Helfat et al., 2006, p. 45). Leaders are key agents for organizational change (Cole, Harris, & Bernerth, 2006; Kotter, 2007) and play role-modeling and sense-giving function for their workforce (Maitlis, 2005). Boehm and Dwertmann (2015, p. 50) mentioned that the top-management team sets the grounds for the treatment and inclusion of age- and disability- diverse employees in the organization, which fosters or hinders positive performance effects. On this basis they proposed the following: »Organizations in which the top-management team holds positive attitudes and shows supportive behavior toward the management of diversity are better«.

The age diversity and disability diversity are increasing. The mentioned change in the workforce has important implications for organizations and managers. Managers must therefore (Boehm and Dwertmann, 2015, p. 56):

- realize that the workforce is changing and to monitor the changes in their teams and organizations;
- Be aware that diversity does not automatically lead to positive effects;
- Actively manage the diversity in their workforce with speciall leadership style to establish positive LMX relationships, through group-oriented aspects such as creating a positive diversity climate, develop condition for teamwork, managing conflicts, etc.



## CONCLUSION

Nowadays age management is very important as a part of diversity management, also in Slovenia. One implements it because it can lead to beneficial effects such as more creativity, higher commitment, and better performance, as well as prevent detrimental consequences such as enhanced discrimination, lowered group functioning, and decreased performance.

Leaders are responsible for implementing of the age management in Slovenian organizations. They could use many leadership styles and approaches. We briefly analyzed the potential impact of four distinct leadership approaches on age and disability diversity:

- Leader-member-exchange theory (LMX),
- Transformational leadership (TFL),
- Health-focused leadership (HFL), and
- Top management leadership.

This confirms our hypothesis that AM must be develop and implement with a special LS.

For Slovenian organizations HFL is not only important, because they must from 2012 on prepare and implement programs of promotion of health and safety at work; HFL is very important also for preparing and implementing AM.

If employers focus on what the generations have in common, treat their employees fairly and offer them work-life balance, challenging projects, opportunities for advancement and learning and growth in their jobs, the companies will get committed, loyal employees and productive workplaces in return. Instead of focusing on what divides employees, starting with employee's similarities is for sure a better approach to managing generations. One must add: with differences one completes each other up; they make participants interdependent, which leads organizations to more holistic, perhaps even requisitely holistic actions (see: Mulej et al, 2013 for details).





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# Differences in Personal Holism of Slovenian Employees

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## *ABSTRACT*

In the proposed article we investigate requisite personal holism (RPH) of Slovenian employees. The core of the research is a human as an employee who possesses abilities, knowledge, skills and personal attributes while at the same time he/she is also defined by his/her motivation, will, values and other feelings. Based on mentioned, a human strives to fulfill his/her life purpose through, among other roles, the role of an employee as well. Although the work awards a person with his/her sense of an identity, self-respect, social support, and material rewards, this is not the only role of an individual in his/her life; he/she is committed to a number of roles, from a partner role, a parent role, to different family roles, a friend role, a neighbor role, and others. In each role a person has duties which should be fulfilled optimally, according to the current social standards. An individual that devotedly fulfills his/her roles has to act as a whole in the best possible way he/she can – and must take into consideration all that is important. This could reflect on one hand in stress and on the other in RPH.

RPH is composed of the following constructs: (i) physical balance (PHBAL), (ii) mental balance (CUST), (iii) social integration (SOCINT), (iv) spiritual maturity (SPIRITUAL) and (v) economic stability (ECONOM) of employees. Our aim was to measure the RPH of employees in Slovenia, together with investigating the differences of RPH among them. For the measurement of RPH we developed our own questionnaires, which were adapted to Slovene conditions, based on the results of the preliminary research. Data was gathered in organizations in Slovenia through questioning by electronic, phone and exceptionally written correspondence in three waves from the 1st April to 30th June 2011. The obtained data were analyzed by using descriptive statistics, ANOVA, t-test and Post hoc tests to analyze the differences between groups.

We studied the levels of RPH and the differences between individuals' RPH according to their working position and the years of service. The hypothesis that the RPH of managers differs from the RPH of the workers at other levels of organizational hierarchy was partly confirmed as the differences are present only in some constructs. The hypothesis that RPH of employees differs between those with more years of seniority as compared to those with less years of service was partly confirmed.

*Keywords: an individual, requisite holism, requisite personal holism, differences, seniority, work position*

## INTRODUCTION

A human being is multilayered; he/she is in synergy, not partly: (i) physical/biological/natural (body), (ii) spiritual (sympathy, perception, thinking and will-power), (iii) social/sociable (individual's relationships to others, interpersonal relations and social harmony – social integration, involvement in different life roles), (iv) spiritual (self-realization, search for life purpose) and (v) economic being (satisfying material needs of oneself as a person, family member, co-worker and a member of a wider community) etc.; a human is characterized by the relatively holistic pattern of relatively lasting features which distinct people from each other while he/she is at the same time a specialized expert with a more or less strong skill for a creative interdisciplinary cooperation (Šarotar Žižek 2015a).

The human's need to become as holistic as possible and to consider as much as possible all crucial attributes, is exposed by Mulej et al. (2000). Holism, as summarised after Mulej and coauthors (2000) interlink (1) the whole, (2) its parts, (3) their relations, and (4) realism as a dialectical system, i.e. one considers everything crucial at the same time and interlinked, interdependent and interactive.

Therefore it is no surprise that Mulej (1979) defines holism as one of his ten rules (later on he rather speaks about guidelines, which is a less deterministic concept) of methodology for the requisite holism of human functioning/behavior (observation, perception, reflection/thinking, emotional and spiritual life, decision-making, communication and action), in his Dialectical Systems Theory (Mulej et al. 2000). Holism means that all attributes from all viewpoints and all their relations and resulting synergies are considered (Mulej, et al., 2000). This reality can of course not be captured by humans; therefore humans need Mulej/Kajzer's law of requisite holism (1998).

Employees are human and for them is very important requisite personal holism (RPH). With the research it has been proven that an individual's RPH as an employee is a multidimensional concept. An individual's RPH is founded on the following dimensions: (i) physical/body balance, (ii) mental maturity, (iii) social integration, (iv) spiritual maturity, (v) economic stability etc. (Šarotar Žižek et al. 2015b).

For measuring an individual dimension we use a scale especially created for the purpose. The progress along individual dimensions enables knowing and implementing of the techniques for assuring RPH. The hypothesis was partly confirmed with the concept of multidimensional model. CFA has showed that the model and the indexes are valid. Along with an organization (including its success and HRM) the core of the research is a human as an employee who possesses abilities, knowledge, skills and personal attributes while at the same time he/she is also defined by her motivation, will, values and other feelings. Based on these a human strives to fulfill his/her life purpose through, among other roles, the role of an employee as well. Although the work awards a person with his/her sense of an identity, self-respect, social support, and material rewards, that is not the only role of an individual in his/her life; he/she is committed to a number of roles, from a partner role, a parent role, to different family roles, a friend role,



a neighbor role, and others. In each role a person has duties which should be fulfilled optimally, according to the current social standards. An individual that devotedly fulfills his/her roles has to act as a whole in the best possible way he/she can – and must take into consideration all that is important. To be able to do that one has to strengthen his/her RPH with praxis and awareness of his/her-self initially as a physical or biological / natural being respectively, implementing active techniques to gain physical balance (healthy eating, Ayurveda, massage and aromatherapy, relaxation, breathing techniques, physical activity, respecting biological Rhythm, additional medical treatments etc.). A human must also be aware of him/herself as a spiritual being that ennobles sympathy, perception, thinking and will-power through the art of living techniques (emotional intelligence, living in the present moment, not forgetting the future, positive thinking and others). A human is also a social being who builds quality relationships with other humans through techniques for professional and work development as well as through social integrity (upbringing, education, training, gaining work experience within professional career, etc.). In present times it is more and more evident that a human is a spiritual being who yearns for self-actualization and life purpose, achieving them through techniques for spiritual development (spiritual intelligence, meditation, mantras, yoga, logo-therapy, practical Buddhist principles for establishing balance, etc.). Also in these times when we can feel the impact of the world-global crisis the fact remains that a human is an economic being who, based on economic stability techniques (creative and working role in different organizations) satisfies his/her material needs as a person, a family member, a co-worker and a member of a wider community (Šarotar Žižek 2012).

Because he/she often lacks time, knowledge, skills and strength for approaching RPH, an individual is faced with stress, spiritual lassitude, emotional and psychological emptiness, etc. That is consequently reflected in his/her low psychic well-being. Low psychic well-being of individuals in the role of employees negatively affects the success of organizations.

In the research we have taken into account that RPH is measured by defined dimensions while progress is ensured by different techniques, and understanding of those has also been studied. Apart from human's skills, abilities, knowledge, experience, values, mission, emotions, psycho-physical state of being etc., also conditions inside their organization such as internal communication, education and trainings, organizational culture, ethics, creative co-operation, leadership, work organization, well-being have a major impact on an individual's RPH.

## MEASUREMENT INSTRUMENT, PARTICIPANTS AND HYPOTHESES

In Slovenia, RPH was measured for the first time in the conditions of the present impacts of the global economic crisis 2008+ (it was measured in the period April – June 2011). In order to carry out the measurement we have developed a measurement tool for RPH. The final questionnaire for the employees included, apart from identification questions, the RPH scales (physical and mental balance, social integration, spiritual maturity in economic stability of employees).

Measurement instrument for physical balance state of human has had five indicators ((i) »In general, I feel exhausted and tired,« (ii) »I'm scared to lose control of myself, to break down, or get sick,« (iii) »I'm in lack of air in time of regeneration and recreation,« (iv) »I feel tension in the chest, neck and head« and (v) »I have problems with concentration and memory,«). These indicators were measured on a five-point Likert scale (never, sometimes, often, very often and always). Social integration was based on one sub-construct *per-dev* personal development and this was measured on five-point Likert scale (I do not agree, partly disagree, neither agree nor disagree, partially agree, disagree). For measurement of spiritual maturity and mental balance, we



used a five-point Likert scale (I do not agree, partly disagree, neither agree nor disagree, partially agree, disagree)<sup>1</sup>. The economic stability was based on answer YES or NO.

On the basis of a random selection, 2409 organizations have been included in the final sample; 1510 of those are micro and small companies, 552 middle-sized and 347 large companies. Data was gathered through questioning by electronic, phone and exceptionally written correspondence in three waves from the 1st April to 30th June 2011.

We developed two hypotheses based on our knowledge and experience from the transfer of knowledge into practice:

- The RPH of managers differs from the RPH of the workers at other levels of organizational hierarchy.
- The RPH of employees differs between those with more years of service as compared to those with less years of service.

## ANALYSIS OF DIFFERENCES BETWEEN SEVERAL GROUPS OF EMPLOYEES

The RPH concept is composed of the following constructs: (i) physical balance (PHBAL), (ii) mental balance (MENBAL), (iii) social integration (SOCINT), (iv) spiritual maturity (SPIRITUAL) in (v) economic stability (ECONOM) of employees.

After an examination of the reliability and validity of individual constructs we began assembling the measurement model. Our modeling is based on 7 constructs (three for MENBAL, three for SPIRITUAL, one for za ECONOM and two for SOCINT) and 5 indicators. Taking into account the complexity of the constructs we have decided that we will further reading indicators constructs for SEWB, PDP, SDT and self-esteem combined in the manifest variables. In this way we designed the following second-order constructs:

- physical balance (PHBAL) with the following items: In general, I feel exhausted and tired; I'm scared to lose control of myself, to break down, or getting sick; I'm in lack of air in time of regeneration and recreation; I have problems with concentration and memory.
- mental balance (MENBAL) with three constructs, which are *pos\_at* (positive attitude), *liv\_mom* (living in the moment) and *cuinti* (emotional Intelligence 1),
- SOCINT, which has construct *per-dev* (personal development),
- SPIRITUAL, which includes constructs *sense* (sense) and *harm* (harmony),
- ECONOM

RPH is based on mentioned three constructs, composed of five indicators. Self-esteem as a construct is based on three indicators.

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<sup>1</sup> We assumed equal distances between points.





## ANALYSIS OF DIFFERENCES BETWEEN GROUPS OF EMPLOYEES ACCORDING TO THEIR SENIORITY

Table 1 shows that employees with seniority over 21 years are the most economically stable, while the economic stability of employees with less than one year of service is the lowest. Employees with seniority from 11 to 15 years generally feel mostly exhausted and tired, while the least exhausted and tired are those who work less than a year. The greatest fear of losing self-control, against break down or diseases have employees who work less than a year and the least fear have employees with seniority between 6 and 10 years. It is interesting that lack of air in time of regeneration and recreation mostly feel those who are employed less than a year. Results of agreement with the statement »I have problems with concentration and memory«, are expected because it shows that the biggest problems have older (employed with seniority over 21 years), and the least employees with seniority less than a year and more than 21 years. Personal development (*per\_dev*) is the most present in those who are employed from 16 to 20 years and the least in those who are employed less than a year. Positive attitude (*pos\_at*) living in the moment (*liv\_mom*) the most present in those who are employed less than a year and the least in those who are employed from 1 to 5 years. Compared to other employees with different seniority, employees with seniority from 16 to 20 years characterized harmony (*harm*) and emotional intelligence (*cuintr*). Emotional intelligence is the least typical for employees with less than 1 year of seniority.

Table 1: Descriptive statistics for RPH with respect to seniority

		N	Mean	Standard deviation	Standard error	95% confidence interval for means	
						Lower bound	Upper bound
ECON	Less than a year	13	2.62	1.193	0.331	1.89	3.34
	From 1 to 5 yr	92	3.79	1.236	0.129	3.54	4.05
	From 6 to 10 yr	76	4.39	1.178	0.135	4.13	4.66
	From 11 to 15 yr	69	4.51	1.346	0.162	4.18	4.83
	From 16 to 20 yr	56	4.50	1.279	0.171	4.16	4.84
	More than 21 yr	152	4.68	1.101	0.089	4.50	4.85
	Total	458	4.35	1.276	0.060	4.23	4.46
In general, I feel exhausted and tired.	Less than a year	13	2.08	0.862	0.239	1.56	2.60
	From 1 to 5 yr	93	2.09	0.803	0.083	1.92	2.25
	From 6 to 10 yr	77	2.22	0.754	0.086	2.05	2.39
	From 11 to 15 yr	71	2.46	0.969	0.115	2.24	2.69
	From 16 to 20 yr	55	2.36	0.930	0.125	2.11	2.62
	More than 21 yr	156	2.33	0.836	0.067	2.19	2.46
	Total	465	2.28	0.856	0.040	2.20	2.36
I'm scared to lose control of myself, to break down, or getting sick.	Less than a year	13	1.62	1.121	0.311	0.94	2.29
	From 1 to 5 yr	93	1.45	0.801	0.083	1.29	1.62
	From 6 to 10 yr	77	1.39	0.610	0.070	1.25	1.53
	From 11 to 15 yr	71	1.59	0.888	0.105	1.38	1.80
	From 16 to 20 yr	55	1.58	0.875	0.118	1.35	1.82
	More than 21 yr	156	1.61	0.869	0.070	1.47	1.75
	Total	465	1.54	0.830	0.038	1.46	1.61

		N	Mean	Standard deviation	Standard error	95% confidence interval for means	
						Lower bound	Upper bound
I'm in lack of air in time of regeneration and recreation.	Less than a year	13	2.00	1.291	0.358	1.22	2.78
	From 1 to 5 yr	93	1.59	0.797	0.083	1.43	1.76
	From 6 to 10 yr	77	1.64	0.931	0.106	1.43	1.85
	From 11 to 15 yr	71	1.73	1.014	0.120	1.49	1.97
	From 16 to 20 yr	55	1.71	1.031	0.139	1.43	1.99
	More than 21 yr	155	1.71	0.919	0.074	1.56	1.86
	Total	464	1.69	0.936	0.043	1.60	1.77
I have problems with concentration and memory.	Less than a year	13	1.62	0.870	0.241	1.09	2.14
	From 1 to 5 yr	93	1.68	0.725	0.075	1.53	1.83
	From 6 to 10 yr	77	1.74	0.750	0.086	1.57	1.91
	From 11 to 15 yr	71	1.70	0.705	0.084	1.54	1.87
	From 16 to 20 yr	55	1.64	0.704	0.095	1.45	1.83
	More than 21 yr	156	1.88	0.814	0.065	1.75	2.01
	Total	465	1.75	0.761	0.035	1.68	1.82
Personal development ( <i>per-dev</i> )	Less than a year	13	3.44	0.786	0.218	2.96	3.91
	From 1 to 5 yr	93	3.53	1.044	0.108	3.32	3.75
	From 6 to 10 yr	77	3.73	0.906	0.103	3.52	3.93
	From 11 to 15 yr	71	3.81	0.998	0.118	3.57	4.04
	From 16 to 20 yr	56	3.90	0.901	0.120	3.66	4.15
	More than 21 yr	156	3.86	0.965	0.077	3.70	4.01
	Total	466	3.76	0.970	0.045	3.67	3.85
Positive attitude ( <i>pos_at</i> )	Less than a year	13	4.33	0.720	0.200	3.90	4.77
	From 1 to 5 yr	93	4.12	0.834	0.086	3.95	4.29
	From 6 to 10 yr	77	4.31	0.622	0.071	4.17	4.45
	From 11 to 15 yr	68	4.32	0.801	0.097	4.12	4.51
	From 16 to 20 yr	55	4.28	0.722	0.097	4.08	4.47
	More than 21 yr	154	4.33	0.732	0.059	4.21	4.44
	Total	460	4.28	0.746	0.035	4.21	4.34
Living in the moment ( <i>liv_mom</i> )	Less than a year	13	4.56	0.384	0.107	4.33	4.79
	From 1 to 5 yr	92	4.34	0.545	0.057	4.23	4.45
	From 6 to 10 yr	77	4.51	0.523	0.060	4.39	4.63
	From 11 to 15 yr	69	4.38	0.662	0.080	4.22	4.54
	From 16 to 20 yr	54	4.50	0.553	0.075	4.34	4.65
	More than 21 yr	152	4.55	0.544	0.044	4.46	4.64
	Total	457	4.47	0.561	0.026	4.42	4.52



		N	Mean	Standard deviation	Standard error	95% confidence interval for means	
						Lower bound	Upper bound
Emotional intelligence ( <i>cuint</i> )	Less than a year	13	4.08	0.534	0.148	3.75	4.40
	From 1 to 5 yr	93	4.16	0.831	0.086	3.98	4.33
	From 6 to 10 yr	77	4.35	0.574	0.065	4.22	4.48
	From 11 to 15 yr	69	4.33	0.617	0.074	4.18	4.47
	From 16 to 20 yr	56	4.37	0.748	0.100	4.17	4.57
	More than 21 yr	154	4.26	0.741	0.060	4.15	4.38
	Total	462	4.27	0.715	0.033	4.21	4.34
Sense ( <i>sense</i> )	Less than a year	13	2.72	1.297	0.360	1.93	3.50
	From 1 to 5 yr	93	3.05	1.058	0.110	2.84	3.27
	From 6 to 10 yr	77	3.26	1.092	0.124	3.01	3.51
	From 11 to 15 yr	70	3.20	1.198	0.143	2.91	3.49
	From 16 to 20 yr	56	3.42	1.066	0.143	3.14	3.71
	More than 21 yr	152	3.54	1.148	0.093	3.35	3.72
	Total	461	3.30	1.137	0.053	3.20	3.41
Harmony ( <i>harm</i> )	Less than a year	13	4.03	0.739	0.205	3.58	4.47
	From 1 to 5 yr	92	3.71	1.042	0.109	3.49	3.92
	From 6 to 10 yr	76	4.01	0.935	0.107	3.80	4.22
	From 11 to 15 yr	68	4.05	0.958	0.116	3.82	4.29
	From 16 to 20 yr	55	4.33	0.878	0.118	4.09	4.56
	More than 21 yr	152	4.14	1.060	0.086	3.97	4.31
	Total	456	4.04	1.006	0.047	3.95	4.13

Source: Own

The results of one-way analysis of variance (ANOVA) are presented in Table 2.

Table 2: The ANOVA results for the differences in the RPH concept with respect to seniority

		Sum of squares	df	Mean square	F	p
ECONOM	Among the groups	87.040	5	17.408	11.981	0.000
	Inside the group	656.761	452	1.453		
	Total	743.801	457			
In general, I feel exhausted and tired.	Among the groups	7.458	5	1.492	2.061	0.069
	Inside the group	332.198	459	0.724		
	Total	339.656	464			
I'm scared to lose control of myself, to break down, or get sick	Among the groups	3.559	5	0.712	1.034	0.397
	Inside the group	316.105	459	0.689		
	Total	319.665	464			
I'm in lack of air in time of regeneration and recreation.	Among the groups	2.573	5	0.515	0.584	0.712
	Inside the group	403.488	458	0.881		
	Total	406.060	463			
I have problems with concentration and memory.	Among the groups	4.153	5	0.831	1.442	0.208
	Inside the group	264.407	459	0.576		
	Total	268.559	464			
Personal development ( <i>per-dev</i> )	Among the groups	9.140	5	1.828	1.962	0.083
	Inside the group	428.630	460	0.932		
	Total	437.770	465			
Positive attitude ( <i>pos_at</i> )	Among the groups	2.976	5	0.595	1.070	0.376
	Inside the group	252.589	454	0.556		
	Total	255.565	459			
Living in the moment ( <i>liv_mom</i> )	Among the groups	3.329	5	0.666	2.138	0.060
	Inside the group	140.414	451	0.311		
	Total	143.743	456			
Emotional Intelligence 1 ( <i>cuinti</i> )	Among the groups	2.934	5	0.587	1.150	0.333
	Inside the group	232.702	456	0.510		
	Total	235.636	461			
Sense ( <i>sense</i> )	Among the groups	20.101	5	4.020	3.186	0.008
	Inside the group	574.180	455	1.262		
	Total	594.281	460			
Harmony ( <i>harm</i> )	Among the groups	16.527	5	3.305	3.352	0.006
	Inside the group	443.789	450	0.986		
	Total	460.316	455			

Source: Own

Table 2 shows that the differences between groups of employees with respect to seniority are not statistically significant ( $p > 0.05$ ) for most of indicators and sub-constructs. For those indicators and sub-constructs and a construct at which there are statistically significant differences ( $p < 0.05$ ), post hoc analysis, which is based on the Tukey HSD method, was made (Table 3).



– PHYSICAL BALLANCE AND SENORITY

Table 2 shows that at indicators of physical balance there are no statistically significant differences between groups of employees with respect to seniority.

– SOCIAL INTEGRATION AND SENORITY

Table 2 shows that for social integration represented by the sub-construct *per-dev* (personal development), the differences between groups with respect to seniority are not statistically significant ( $p > 0.05$ ).

– MENTAL BALLANCE AND SENORITY

Table 2 shows that at all sub-constructs of MENBAL (mental ballance) that are *pos\_at* (positive attitude), *liv\_mom* (living in the moment) and *cuintr* (emotional Intelligence 1), the differences between groups are not statistically significant ( $p > 0.05$ ).

– SPIRITUAL BALLANCE AND SENORITY

Table 2 also shows that at sub-constructs *sense* (sense) and *harm* (harmony) there are statistically significant differences between groups ( $p < 0.05$ ). Post hoc analysis (Tukey HSD test) (Table 3) shows that at sub-construct *sense* there are significant differences between employees with seniority from 1 to 5 years and those with more than 21 years. This is not surprising, since the highest mean in terms of life sense reaches the group of employees with more than 21 years of seniority, and minimum value has the group of employees with less than one year of seniority (Table 1). At the sub-construct *harm* (harmony) there are statistically significant differences between the group of employees with seniority from 1 to 5 years and the group with seniority from 16 to 20 years, and also between the group of employees with seniority from 1 to 5 years and the one with more than 21 years of seniority. The maximum mean of harm (Harmony) is achieved by the group of employees with seniority from 16 to 20 years, and the lowest mean is achieved by group of employees with seniority from 1 to 5 years.

– ECONOMIC BALLANCE AND SENORITY

Table 2 shows that the differences in the construct ECONOM (economic ballance) between the groups, in relation to seniority are statistically significant. The results of post hoc analysis in Table 3 show that there are statistically significant differences ( $p < 0.05$ ) between the group of employees with seniority less than a year and all other groups of employees, as well as the group of employees with seniority from 1 to 5 years and all other groups of employees. This is not surprising, since the mean of economic balance of employee increases with longer seniority.

There are no statistically significant differences between the groups of employees with longer seniority, that is from 6 to 10 years, from 11 to 15 years, from 16 to 20 years, and more than 21 years.

**Table 3: Post hoc tests for the analysis of the differences between groups of employees for the concept RPH with respect to seniority**

Dependent variable	(I) Select your seniority.	(J) Select your seniority.	Mean difference (I-J)	Standard error	p	95% confidence interval	
						Lower bound	Upper bound
ECON	Less than a year	From 1 to 5 yr	-1.178 <sup>*</sup>	0.357	0.013	-2.200	-0.156
		From 6 to 10 yr	-1.779 <sup>*</sup>	0.362	0.000	-2.815	-0.744
		From 11 to 15 yr	-1.892 <sup>*</sup>	0.365	0.000	-2.935	-0.849
		From 16 to 20 yr	-1.885 <sup>*</sup>	0.371	0.000	-2.947	-0.823
		More than 21 yr	-2.062 <sup>*</sup>	0.348	0.000	-3.059	-1.065
	From 1 to 5 yr	Less than a year	1.178 <sup>*</sup>	0.357	0.013	0.156	2.200
		From 6 to 10 yr	-0.601 <sup>*</sup>	0.187	0.017	-1.136	-0.066
		From 11 to 15 yr	-0.714 <sup>*</sup>	0.192	0.003	-1.263	-0.164
		From 16 to 20 yr	-0.706 <sup>*</sup>	0.204	0.008	-1.291	-0.122
		More than 21 yr	-0.884 <sup>*</sup>	0.159	0.000	-1.340	-0.428
	From 6 to 10 yr	Less than a year	1.779 <sup>*</sup>	0.362	0.000	0.744	2.815
		From 1 to 5 yr	0.601 <sup>*</sup>	0.187	0.017	0.066	1.136
		From 11 to 15 yr	-0.112	0.200	0.993	-0.686	0.461
		From 16 to 20 yr	-0.105	0.212	0.996	-0.713	0.502
		More than 21 yr	-0.283	0.169	0.552	-0.768	0.202
	From 11 to 15 yr	Less than a year	1.892 <sup>*</sup>	0.364	0.000	0.849	2.935
		From 1 to 5 yr	0.714 <sup>*</sup>	0.192	0.003	0.164	1.263
		From 6 to 10 yr	0.112	0.200	0.993	-0.461	0.686
		From 16 to 20 yr	0.007	0.217	1.000	-0.613	0.628
		More than 21 yr	-0.170	0.175	0.926	-0.671	0.330
	From 16 to 20 yr	Less than a year	1.885 <sup>*</sup>	0.371	0.000	0.822	2.947
		From 1 to 5 yr	0.707 <sup>*</sup>	0.204	0.008	0.122	1.291
		From 6 to 10 yr	0.105	0.212	0.996	-0.502	0.713
		From 11 to 15 yr	-0.007	0.217	1.000	-0.628	0.613
		More than 21 yr	-0.178	0.188	0.935	-0.717	0.362
	More than 21 yr	Less than a year	2.062 <sup>*</sup>	0.348	0.000	1.065	3.059
		From 1 to 5 yr	0.884 <sup>*</sup>	0.159	0.000	0.429	1.340
		From 6 to 10 yr	0.283	0.169	0.552	-0.202	0.768
		From 11 to 15 yr	0.170	0.175	0.926	-0.330	0.671
		From 16 to 20 yr	0.179	0.188	0.935	-0.362	0.717

\*. The mean difference is statistically significant at the 0.05 level.

Dependent variable	(I) Select your seniority.	(J) Select your seniority.	Mean difference (I-J)	Standard error	p	95% confidence interval		
						Lower bound	Upper bound	
Harmony	Tukey HSD	Less than a year	From 1 to 5 yr	0.319	0.294	0.887	-0.523	1.161
			From 6 to 10 yr	0.017	0.298	1.000	-0.836	0.870
			From 11 to 15 yr	-0.028	0.301	1.000	-0.889	0.832
			From 16 to 20 yr	-0.302	0.306	0.923	-1.178	0.575
			More than 21 yr	-0.119	0.287	0.998	-0.940	0.702
		From 1 to 5 yr	Less than a year	-0.319	0.294	0.887	-1.161	0.523
			From 6 to 10 yr	-0.302	0.154	0.365	-0.743	0.138
			From 11 to 15 yr	-0.347	0.159	0.246	-0.802	0.107
			From 16 to 20 yr	-0.621*	0.169	0.004	-1.105	-0.136
			More than 21 yr	-0.438*	0.131	0.012	-0.814	-0.063
		From 6 to 10 yr	Less than a year	-0.017	0.298	1.000	-0.870	0.836
			From 1 to 5 yr	0.303	0.154	0.365	-0.138	0.743
			From 11 to 15 yr	-0.046	0.166	1.000	-0.520	0.429
			From 16 to 20 yr	-0.319	0.176	0.459	-0.822	0.185
			More than 21 yr	-0.136	0.140	0.926	-0.535	0.263
		From 11 to 15 yr	Less than a year	0.028	0.301	1.000	-0.832	0.889
			From 1 to 5 yr	0.347	0.159	0.246	-0.107	0.802
			From 6 to 10 yr	0.045	0.166	1.000	-0.429	0.520
			From 16 to 20 yr	-0.273	0.180	0.653	-0.789	0.242
			More than 21 yr	-0.091	0.145	0.989	-0.505	0.324
		From 16 to 20 yr	Less than a year	0.301	0.306	0.923	-0.575	1.178
			From 1 to 5 yr	0.621*	0.169	0.004	0.136	1.105
			From 6 to 10 yr	0.319	0.176	0.459	-0.185	0.822
			From 11 to 15 yr	0.273	0.180	0.653	-0.242	0.789
			More than 21 yr	0.182	0.156	0.852	-0.265	0.630
		More than 21 yr	Less than a year	0.119	0.287	0.998	-0.702	0.940
			From 1 to 5 yr	0.438*	0.131	0.012	0.063	0.814
			From 6 to 10 yr	0.136	0.139	0.926	-0.263	0.535
			From 11 to 15 yr	0.091	0.145	0.989	-0.324	0.505
			From 16 to 20 yr	-0.182	0.156	0.852	-0.630	0.265

\*. The mean difference is statistically significant at the 0.05 level.



Dependent variable	(I) Select your seniority.	(J) Select your seniority.	Mean difference (I-J)	Standard error	p	95% confidence interval		
						Lower bound	Upper bound	
Sense	Tukey HSD	Less than a year	From 1 to 5 yr	-0.336	0.333	0.915	-1.288	0.616
			From 6 to 10 yr	-0.542	0.337	0.593	-1.506	0.422
			From 11 to 15 yr	-0.482	0.339	0.714	-1.453	0.489
			From 16 to 20 yr	-0.705	0.346	0.323	-1.694	0.285
			More than 21 yr	-0.817	0.325	0.121	-1.746	0.112
		From 1 to 5 yr	Less than a year	0.336	0.333	0.915	-0.616	1.288
			From 6 to 10 yr	-0.206	0.173	0.842	-0.701	0.289
			From 11 to 15 yr	-0.146	0.178	0.963	-0.655	0.363
			From 16 to 20 yr	-0.369	0.190	0.378	-0.913	0.175
			More than 21 yr	-0.481*	0.148	0.015	-0.905	-0.058
		From 6 to 10 yr	Less than a year	0.542	0.337	0.593	-0.422	1.506
			From 1 to 5 yr	0.206	0.173	0.842	-0.289	0.701
			From 11 to 15 yr	0.060	0.186	1.000	-0.471	0.591
			From 16 to 20 yr	-0.163	0.197	0.963	-0.728	0.402
			More than 21 yr	-0.275	0.157	0.498	-0.725	0.174
		From 11 to 15 yr	Less than a year	0.482	0.339	0.714	-0.489	1.453
			From 1 to 5 yr	0.146	0.178	0.963	-0.363	0.655
			From 6 to 10 yr	-0.060	0.186	1.000	-0.591	0.471
			From 16 to 20 yr	-0.223	0.201	0.879	-0.799	0.354
			More than 21 yr	-0.335	0.162	0.308	-0.800	0.129
		From 16 to 20 yr	Less than a year	0.705	0.346	0.323	-0.285	1.694
			From 1 to 5 yr	0.369	0.190	0.378	-0.175	0.913
			From 6 to 10 yr	0.163	0.197	0.963	-0.402	0.728
			From 11 to 15 yr	0.223	0.201	0.879	-0.354	0.799
			More than 21 yr	-0.112	0.176	0.988	-0.615	0.390
		More than 21 yr	Less than a year	0.817	0.325	0.121	-0.112	1.746
			From 1 to 5 yr	0.481*	0.148	0.015	0.058	0.905
			From 6 to 10 yr	0.275	0.157	0.498	-0.174	0.725
			From 11 to 15 yr	0.335	0.162	0.308	-0.129	0.800
			From 16 to 20 yr	0.112	0.176	0.988	-0.390	0.615

\*. The mean difference is statistically significant at the 0.05 level.

Source: Own



## ANALYSIS OF DIFFERENCES BETWEEN GROUPS OF EMPLOYEES ACCORDING TO THEIR WORK POSITION

Table 4 shows descriptive statistics for the RPH of employees regarding their work position. The results show that, on average, contractors feel exhausted and tired to the greatest extent and operational leaders (the last level of management) feel exhausted and tired to the least extent. On average, the statement »I'm scared to lose control of myself, to break down, or get sick« is mostly characterized by independent professional staff (who do not have direct reports) and least by operational leaders. With lack of air in the time of regeneration and recreation is mostly facing senior and middle management, and least operational leaders. Contractors are the ones who mostly have problems with concentration and memory, as opposed to operational leaders. Positive attitude, living in the moment, emotional intelligence and harmony are mostly present in operational management and least at contractors. Personal development and sense (in life) are characterized for higher and middle management, and least for contractors. Economic balance or stability is largely present in operational management and least for contractors.



Table 4: Descriptive statistics for RPH based on work position

		N	Mean	Standard deviation	Standard error	95% confidence interval for means	
						Lower bound	Upper bound
In general I feel exhausted and tired.	Higher and middle management	80	2.26	0.868	0.097	2.070	2.460
	Operative leader (the last level of management)	66	2.21	0.595	0.073	2.070	2.360
	Independent professional staff (withou direct reports)	215	2.27	0.872	0.059	2.160	2.390
	Contractors	99	2.34	0.949	0.095	2.150	2.530
	Total	460	2.28	0.854	0.040	2.200	2.360
I'm scared to lose control of myself, to break down, or get sick	Higher and middle management	80	1.53	0.900	0.101	1.320	1.730
	Operative leader (the last level of management)	66	1.44	0.585	0.072	1.300	1.580
	Independent professional staff (withou direct reports)	216	1.56	0.833	0.057	1.450	1.680
	Contractors	98	1.53	0.888	0.090	1.350	1.710
	Total	460	1.53	0.825	0.038	1.460	1.610
I'm in lack of air in time of regeneration and recreation.	Higher and middle management	80	1.78	1.006	0.112	1.550	2.000
	Operative leader (the last level of management)	66	1.56	0.806	0.099	1.360	1.760
	Independent professional staff (withou direct reports)	215	1.69	0.947	0.065	1.570	1.820
	Contractors	98	1.65	0.898	0.091	1.470	1.830
	Total	459	1.68	0.927	0.043	1.590	1.760
I have problems with concentration and memory.	Higher and middle management	80	1.74	0.775	0.087	1.560	1.910
	Operative leader (the last level of management)	66	1.67	0.591	0.073	1.520	1.810
	Independent professional staff (withou direct reports)	216	1.75	0.742	0.051	1.650	1.850
	Contractors	98	1.83	0.862	0.087	1.650	2.000
	Total	460	1.75	0.755	0.035	1.680	1.820
Personal development (oseb_raz)	Higher and middle management	80	4.08	0.827	0.092	3.895	4.263
	Operative leader (the last level of management)	66	3.96	0.728	0.090	3.786	4.144
	Independent professional staff (withou direct reports)	216	3.73	0.908	0.062	3.613	3.856
	Contractors	99	3.41	1.190	0.120	3.177	3.651
	Total	461	3.76	0.964	0.045	3.670	3.847



		N	Mean	Standard deviation	Standard error	95% confidence interval for means	
						Lower bound	Upper bound
Positive attitude ( <i>pos_at</i> )	Higher and middle management	79	4.39	0.572	0.064	4.264	4.521
	Operative leader (the last level of management)	65	4.42	0.587	0.073	4.275	4.566
	Independent professional staff (withou direct reports)	212	4.25	0.753	0.052	4.145	4.349
	Contractors	99	4.14	0.887	0.089	3.968	4.322
	Total	455	4.27	0.740	0.035	4.207	4.343
Living in the moment ( <i>liv_mom</i> )	Higher and middle management	80	4.53	0.467	0.052	4.424	4.632
	Operative leader (the last level of management)	66	4.55	0.525	0.065	4.420	4.678
	Independent professional staff (withou direct reports)	210	4.45	0.564	0.039	4.372	4.526
	Contractors	96	4.41	0.645	0.066	4.278	4.540
	Total	452	4.47	0.562	0.026	4.417	4.521
Emotional intelligence 1 ( <i>cuintr</i> )	Higher and middle management	80	4.36	0.503	0.056	4.251	4.474
	Operative leader (the last level of management)	65	4.52	0.545	0.068	4.380	4.650
	Independent professional staff (withou direct reports)	214	4.24	0.688	0.047	4.150	4.336
	Contractors	98	4.11	0.883	0.089	3.930	4.284
	Total	457	4.27	0.699	0.033	4.209	4.338
Harmony( <i>harm</i> )	Higher and middle management	80	4.07	0.912	0.102	3.868	4.274
	Operative leader (the last level of management)	64	4.15	1.046	0.131	3.890	4.412
	Independent professional staff (withou direct reports)	211	4.06	0.974	0.067	3.928	4.192
	Contractors	96	3.91	1.092	0.111	3.685	4.128
	Total	451	4.04	1.000	0.047	3.950	4.135
Sense ( <i>sense</i> )	Higher and middle management	80	3.49	1.020	0.114	3.265	3.719
	Operative leader (the last level of management)	65	3.48	1.147	0.142	3.193	3.761
	Independent professional staff (withou direct reports)	215	3.23	1.138	0.078	3.077	3.382
	Contractors	96	3.15	1.197	0.122	2.910	3.395
	Total	456	3.29	1.137	0.053	3.190	3.399
ECONOM	Higher and middle management	79	4.66	1.165	0.131	4.397	4.919
	Operative leader (the last level of management)	63	4.78	1.170	0.147	4.483	5.073
	Independent professional staff (withou direct reports)	215	4.30	1.218	0.083	4.139	4.466
	Contractors	96	3.90	1.425	0.145	3.607	4.185
	Total	453	4.34	1.280	0.060	4.226	4.463

Source: Own

The results show that, on average, contractors feel exhausted and tired to the greatest extent and operational leaders (the last level of management) feel exhausted and tired to the least extent. On average, the statement »I'm scared to lose control of myself, to break down, or get sick« is mostly characterized by independent professional staff (who do not have direct reports) and least by operational leaders. With lack of air in the time of regeneration and recreation is mostly facing senior and middle management, and least operational leaders. Contractors are the ones who mostly have problems with concentration and memory, as opposed to operational leaders. Positive attitude, living in the moment, emotional intelligence and harmony are mostly present in operational management and least at contractors. Personal development and sense (in life) are characterized for higher and middle management, and least for contractors. Economic balance or stability is largely present in operational management and least for contractors.



Table 5: ANOVA for the analysis of differences between employees with respect to work position

		Sum of squares	df	Mean square	F	p
I'm scared to lose control of myself, to break down, or get sick.	Among the groups	0,803	3	0,268	0,391	0,759
	Inside the group	311,708	456	0,684		
	Total	312,511	459			
I'm in lack of air in time of regeneration and recreation.	Among the groups	1,770	3	0,590	0,685	0,562
	Inside the group	392,151	455	0,862		
	Total	393,922	458			
I have problems with concentration and memory.	Among the groups	1,043	3	0,348	0,608	0,610
	Inside the group	260,705	456	0,572		
	Total	261,748	459			
In general I feel exhausted and tired.	Among the groups	0,732	3	0,244	0,334	0,801
	Inside the group	333,650	456	0,732		
	Total	334,383	459			
Personal development ( <i>per-dev</i> )	Among the groups	22,894	3	7,631	8,618	0,000
	Inside the group	404,663	457	0,885		
	Total	427,557	460			
Positive attitude ( <i>pos_at</i> )	Among the groups	4,312	3	1,437	2,653	0,048
	Inside the group	244,347	451	0,542		
	Total	248,659	454			
Living in the moment ( <i>liv_mom</i> )	Among the groups	1,138	3	0,379	1,203	0,308
	Inside the group	141,179	448	0,315		
	Total	142,316	451			
Emotional intelligence I ( <i>cuint1</i> )	Among the groups	7,348	3	2,449	5,150	0,002
	Inside the group	215,462	453	0,476		
	Total	222,810	456			
Harmony ( <i>harm</i> )	Among the groups	2,665	3	0,888	0,888	0,447
	Inside the group	447,090	447	1,000		
	Total	449,755	450			
Sense ( <i>sense</i> )	Among the groups	8,111	3	2,704	2,108	0,098
	Inside the group	579,760	452	1,283		
	Total	587,871	455			
ECONOM (Economical ballance)	Among the groups	39,310	3	13,103	8,393	0,000
	Inside the group	700,968	449	1,561		
	Total	740,278	452			

Source: Own

Table 5 shows that there is no statistically significant differences in constructs PHBAL (physical balance), *liv\_mom* (living in the moment), *harm* (harmony) in *sense* (sense).

The ANOVA results in Table 5 for the construct Economics show that that differences in economic stability between groups of employees based on work position are statistically significant. We were interested also between which groups of employees

there are statistically significant differences, so we performed additional post hoc analysis. The results in Table 6 show that there are significant differences between higher and middle management and contractors, the operational managers and independent professionals and between operational managers and contractors. Let us add that the highest mean in the construct of economic stability achieved operational managers and the lowest achieved contractors. We can claim that economic stability increases with the complexity of the work position.

We also analyzed personal development (*per\_dev*) of employees based on work position of respondents. Table 5 shows that there are statistically significant differences in personal development and social integration between groups of employees based on work position ( $p < 0.05$ ). The results of post hoc analysis in Table 6 show that significant differences exist in personal development, namely between higher and middle management and independent professional staff (without direct reports), between higher and middle management and contractors, the operational manager (only the last level of management) and contractors and professional staff and contractors. Differences arise from the fact that the highest mean of personal development was achieved in higher and middle management, and the lowest by contractors. -Compared with contractors, professional staff achieved slightly higher mean values.

From tables 5 and 6 we come to some conclusions for mental balance (MENBAL), which includes a positive attitude, living in the moment and emotional intelligence, based on work position. Table 5 shows that there are statistically significant differences in two subconstructs of mental balance: positive attitude ( $p > 0.05$ ) and emotional intelligence ( $p < 0.01$ ). Table 6 shows that in emotional intelligence of employees, there are differences between operational managers and independent professional staff and between operational managers and contractors. Based on means of emotional intelligence we can conclude that the most emotionally intelligent are managers, followed by higher and middle management, then independent professional staff and at the end, contractors.





Table 6: Post hoc tests for the of differences between groups of employees with respect to work position

Dependent variable	(I) Select the work you would like to do in organization.	(J) Select the work you do in organization.	Mean difference (I-J)	Standard error	p	95% Interval of confidence for mean		
						Lower bound	Upper bound	
Personal development ( <i>per_dev</i> )	Tamhrane	Higher and middle management	Operational leaders (last level of management)	0.115	0.129	0.941	-0.229	0.115
			Independent professional staff (without direct reports)	0.345	0.111	0.014	0.048	0.345
			Contractors	0.665	0.151	0.000	0.263	0.665
		Operational leaders (last level of management)	Higher and middle management	-0.115	0.129	0.941	-0.458	-0.115
			Independent professional staff (without direct reports)	0.230	0.109	0.200	-0.061	0.230
			Contractors	0.551	0.149	0.002	0.153	0.551
	Independent professional staff (without direct reports)	Higher and middle management	-0.345	0.111	0.014	-0.641	-0.345	
		Operational leaders (last level of management)	-0.023	0.109	0.200	-0.521	-0.230	
		Contractors	0.320	0.135	0.106	-0.038	0.320	
	Contractors	Higher and middle management	-0.665	0.151	0.000	-1.067	-0.665	
		Operational leaders (last level of management)	-0.550	0.149	0.002	-0.949	-0.550	
		Independent professional staff (without direct reports)	-0.320	0.135	0.106	-0.679	-0.320	
Emotional intelligence 1 ( <i>emint1</i> )	Tamhrane	Higher and middle management	Operational leaders (last level of management)	-0.153	0.088	0.410	-0.388	-0.153
			Independent professional staff (without direct reports)	0.119	0.073	0.485	-0.075	0.120
			Contractors	0.255	0.105	0.095	-0.026	0.255
		Operational leaders (last level of management)	Higher and middle management	0.153	0.088	0.410	-0.082	0.153
			Independent professional staff (without direct reports)	0.272	0.082	0.007	0.053	0.272
			Contractors	0.408	0.112	0.002	0.110	0.408
	Independent professional staff (without direct reports)	Higher and middle management	-0.120	0.073	0.485	-0.314	-0.120	
		Operational leaders (last level of management)	-0.272	0.082	0.007	-0.492	-0.272	
		Contractors	0.136	0.101	0.696	-0.133	0.136	
	Contractors	Higher and middle management	-0.255	0.105	0.095	-0.536	-0.255	
		Operational leaders (last level of management)	-0.408	0.112	0.002	-0.706	-0.408	
		Independent professional staff (without direct reports)	-0.136	0.101	0.696	-0.405	-0.136	



Dependent variable		(I) Select the work you would like to do in organization.	(J) Select the work you do in organization.	Mean difference (I-J)	Standard error	p	95% Interval of confidence for mean		
							Lower bound	Upper bound	
Positive attitude ( <i>poa_at</i> )	Tamhr ane	Higher and middle management	Operational leaders (last level of management)	-0.028	0.097	1.000	-0.288	-0.028	
			Independent professional staff (without direct reports)	0.146	0.083	0.392	-0.074	0.146	
			Contractors	0.248	0.110	0.144	-0.045	0.248	
		Operational leaders (last level of management)	Higher and middle management	0.028	0.097	1.000	-0.231	0.028	
			Independent professional staff (without direct reports)	0.174	0.089	0.283	-0.065	0.174	
			Contractors	0.276	0.115	0.102	-0.031	0.276	
		Independent professional staff (without direct reports)	Higher and middle management	-0.146	0.083	0.392	-0.365	-0.146	
			Operational leaders (last level of management)	-0.174	0.089	0.283	-0.412	-0.174	
			Contractors	0.102	0.103	0.904	-0.172	0.102	
	Contractors	Higher and middle management	-0.248	0.110	0.144	-0.540	-0.248		
		Operational leaders (last level of management)	-0.276	0.115	0.102	-0.582	-0.276		
		Independent professional staff (without direct reports)	-0.102	0.103	0.904	-0.377	-0.102		
	ECONOM	Tukey HSD	Higher and middle management	Operational leaders (last level of management)	-0.120	0.211	0.942	-0.664	0.425
				Independent professional staff (without direct reports)	0.356	0.164	0.135	-0.068	0.780
				Contractors	0.762 <sup>*</sup>	0.190	0.000	0.273	1.252
			Operational leaders (last level of management)	Higher and middle management	0.120	0.211	0.942	-0.425	0.664
				Independent professional staff (without direct reports)	0.475 <sup>*</sup>	0.179	0.041	0.014	0.937
				Contractors	0.882 <sup>*</sup>	0.203	0.000	0.360	1.404
Independent professional staff (without direct reports)			Higher and middle management	-0.356	0.164	0.135	-0.780	0.068	
			Operational leaders (last level of management)	-0.475 <sup>*</sup>	0.179	0.041	-0.937	-0.014	
			Contractors	0.406 <sup>*</sup>	0.153	0.041	0.011	0.802	
Contractors			Higher and middle management	-0.762 <sup>*</sup>	0.190	0.000	-1.252	-0.273	
			Operational leaders (last level of management)	-0.882 <sup>*</sup>	0.203	0.000	-1.404	-0.360	
			Independent professional staff (without direct reports)	-0.406 <sup>*</sup>	0.153	0.041	-0.802	-0.011	

\* The mean difference is statistically significant at the 0.05 level. .

Source: Own

## CONCLUSION

We studied the differences between individuals' RPH according to their working position and the years of service. In connection to differences in RPH of individuals we have formulated a hypothesis that RPH of individuals differ between those of management level as compared to workers from the other levels of organizational hierarchy. The hypothesis was partly confirmed as the differences are present only in some sub-constructs and constructs. The second hypothesis that RPH of individuals differs between those with more years of service as compared to those with less years of service was partly confirmed.

All findings lead to a conclusion that we deal with a relevant, up-to-date topic. Important findings will help Slovene (and other) organizations to understand RPH of employees. Because RPH is basis for psychich well-being of employees and their well-being can be creative oriented. Such well-being is then the basis for success of an organization.

Future research shoud highlight the differences between individuals' RPH according to gender. It is possible to research the effects of employees' RPH on their performance and well-being.



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# Factors Influencing Use of CRM Solutions in Organizations?

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## *ABSTRACT*

The development of information technology are accompanied by the changes in the need of obtaining the customer information in the context of CRM solutions. The organizations are making continuous effort to obtain quality customer data and it has to be acquired timely, whereby the organizations have to adapt to the technology used by the clients. In this way we can gain useful customer information for our strategic decision-making. In this paper we present the key elements of application of the CRM solutions (customer relationship management) and implementation of CRM solutions within organizations. This article is based on two case studies. Case studies allowed us to investigate the implementation of CRM solutions in a retail organization and a financial organization. The case studies have found that management support, human resources and statistics, mathematics, business informatics and statistical programming support, understanding the content of the IT information together with the software support, and customer-oriented organization are important factors of the use of CRM solution tools and modules. We have also found that organizations have a lot of untapped potential, especially in the integration of analytical tools and quantitative methods in CRM solutions and in integration of CRM solutions in other business processes in organizations.

*Keywords:* **customer relationship management (CRM), CRM solution, critical factors, quantitative methods, case research**

## INTRODUCTION

For a long time the belief prevailed that an important aspect of the operation of the organization is to acquire and keep the customers (Drucker 1954). New forms of competition and structural changes in the exchange processes have led to a paradigm to create long-term relationships between stakeholders in the market. Due to increasingly demanding customers and their complex and differentiated needs and expectations, organizations pursue to introduction and use of new IT solutions, under which the CRM solutions has increasing role (Sen & Sinha 2011). Reasons for the increased interest in the use of CRM solutions are technology advances, greater alignment with the customers and information about them and consequently stance on knowledge about customers, greater market competitiveness and reduced customers loyalty. All this has led to the need for the introduction of new IT solutions, which enable organizations to provide consumers with increasingly customized products/services (Peppard 2000, Teoa et al. 2006, Almotairi 2009, Stein & Smith 2009, Fazlzadeh et al. 2011, Chuang & Lin 2013). Globalization, internationalization, deregulation, the progress of information technology, short product life cycle, developing awareness of the link between customer retention and profitability has in part also led to this situation (Chandra & Kumar 2000, Zineldin & Jonsson 2000, Sahay 2003, Stefanou et al. 2003]. CRM solutions enables organizations to achieve positive effects, such as increased sales and thus profits, greater competitive advantage in the market, increasing customer loyalty and customer satisfaction, generate new knowledge about customers, improving the performance and the quality of customer relationships, acquire new customers, encourage existing customers to purchase, maintain good relation with customers as well as increase value for customers, and thus the image of an organization can be improved (Colgate & Danaher 2000, Dowling 2002, Messner 2004, Mithas et al. 2005, Jayachandran 2005, Pedron & Saccol 2009, Pai & Tu 2011, Sivarakas 2011, Khodakarami & Chan 2014).

Despite the positive effects of CRM solutions, some researchers warn that use of CRM solutions can also have negative effects on the operations of organization. The most common causes of the negative effects are inadequate measurement systems, low support and involvement of management of the organization, lack of understanding of the business benefits of CRM solutions, low quality and range of data, exceeding the planned cost and lack of skills in setting up and using CRM solutions (Newell 2003, Boulding 2005, Ngai 2005, Payne A, Frow 2004, Pedron & Saccol 2009). Many researchers also point to the lack of understanding of CRM solutions, as many users treat it as a technological tool, while forgetting the strategic aspect that goes beyond information technology (Pedron & Saccol 2009). Despite the fact that CRM was very promising in the mid 90's, there have been a number of errors that have led to concerns about its use. Most of the problems in the application of CRM solutions is not technical, but organizational and include organizational changes and disturbances, different views of customer data and changes in business processes, so it is necessary to more fully devote time to examining organizational factors (Kaushik M, Kundan 2009, Finnegan & Currie 2010).

To this end, the researchers have focused on the study of differentiated critical factors that are important for the adoption and use of CRM solutions (Sharma & Goyal 2011, Kavosh 2012, Davood Karimzadgan 2013). Reviewing the research, we have perceived deficit area on the relationship of critical organizational factors and perceived use of IT solutions at the level of the entire organization. Our research is focused in the following key research questions: (1) how organizations use CRM solution, (2) which are the critical factors for the organization's use of CRM solution and (3) how organizations apply quantitative methods of CRM solution.



## CRITICAL FACTORS OF THE USE OF CRM SOLUTIONS

Effective CRM solution is about acquiring, analyzing and sharing knowledge about and with customers for the quick and timely service to the customer. CRM solutions provides an integrated view of customer interactions starting with software applications that capture these interactions and with the effective analyses of the data to reveal the hidden and important information required for improving the relationship of firms with the customers (Davood Karimzadgan 2013). For the effective use of integrated IT solutions it is necessary to take into account a number of internal and external factors that are the starting point for the process and technological orientation of the organization, as they involve process and technological aspects of the treatment factors. Critical factors of information solutions implementation are spread over number of areas and must be met for the successful implementation of CRM solutions. In Table 1 we present the literature review of critical factors that are important for the effective use of CRM solutions.

Researchers identify the critical factors of CRM solutions from the processes, technology and human resources. The literature review reveals that at the organizational level the critical factor that is taken into account is the orientation of organization on the customers (f.e. Al-Hudhaif 2011). Very often researchers treat stance of the organization from a strategic oint of view, which includes technological orientation, customer orientation, competition orientation, internal/cost orientation, innovation orientation, entrepreneurial orientation, quality orientation and productivity orientation (Theodosiou et al. 2012, Altuntaş et al. 2013). Strategic orientations are the guiding principles that influence a firm's strategy-making activities. Strategic orientation is reflected in strategic directions implemented that lead to superior performance (Theodosiou et al. 2012, Noble 2002, Slater et al. 2006]. Also, some researchers analyzed the performance of CRM solutions and the impact of organizational factors on it - they have found that organizational factors (management, structures and employees) have a major impact on performance of CRM solutions (Davood Karimzadgan 2013).





Table 1: Literature review of critical factors of CRM solutions

Authors	Type/phase of CRM	Factors
(Bavarsad & Hosseinipour 2013; Sarmaniotis et al. 2013)	Basic CRM	Information technology, management commitment, human resource knowledge, knowledge of CRM, organizational culture; Effective customer communication strategy, profitable marketing strategy and IT infrastructure, suitable organizational strategy and administrative support
(Kavosh et al. 2012)	Basic CRM	Add goals or benefits from implementing CRM, tools and technology of CRM, participation of consumers and users of CRM, carefully gathering information on the implementation of CRM by employees at different levels and professional qualifications of CRM
(Malek & Anand 2008; Avlonitis et al. 2005)	Basic CRM	Establishing measurable business goals, aligning business and IT operations, getting executive support up front, allowing business goals drive functionality, minimizing customization by leveraging out-of-the-box functionality, using trained, experienced consultants, actively involving end users in solution design, investing in training to empower end users, using a phased rollout schedule, measuring, monitoring, and tracking; Social factors, organizational factors and factors of an employee
(Hung et al. 2010)	Adoption of CRM system	Characteristics of Organization (size of organization, IS capabilities of staff, innovation of senior executives, knowledge management capabilities), Characteristics of CRM (relative advantage, complexity)
(Nguyen & Waring 2013)	Adoption of CRM technology	Management characteristics, involvement of the employees, employee characteristics, IT resources, firm's characteristics (size, industry, perceived market position, innovativeness)
(Sharma & Goyal 2011)	Implementation of CRM	CRM solutions implementation issues, implementation of CRM through employees, CRM business strategies of organization, interpretation and synchronization of service, customer centric approach, differences between IT and CRM, right method to interact with customer, right tool of data mining, clear methodology and steps, measurable goals and ROI (Return on investment) of organization and training of the front people
(Lawson-Body et al. 2011)	CRM implementation	Contextual factors (Competitive pressures, environmental pressures, relations with customers, peer influence), organizational factors-technical factors (IT infrastructure, IT Training, IT maintenance plan, IT application complexity), organizational factors-social factors (top management support, human resource management, size of organization, organizational change management, knowledge management), individual factors (computer anxiety, user acceptance, personal innovativeness, user resistance, computer experience, user personal dispositions, user capacity of acquired IT knowledge)
(Al-Hudhaif 2011)	CRM implementation	Strategic factors (top management support, organizational culture, developing a clear CRM strategy, clear project vision and scope, and benchmarking), tactical factors (employee acceptance, CRM software selection, integration with other systems and training in CRM efforts), operational factors (realistic CRM implementation schedule, enterprise performance metrics for CRM, personalization, customer orientation, and data mining)
(Al-Mudimigh et al. 2011)	Implementation of CRM	Change management, operational management, knowledge management, marketing management, sales management, customer support management, technology management, project management
(Alshawi et al. 2011; Moreno & Melendez 2011)	CRM implementation	Organisational factors (Benefits; Staff ICT (Information and Communication Technologies), ICT skills; Organisation size; Internal barriers; Support; Funding; Strategy; Business objectives; Customer response/attitude; Government; Competitive pressure; External barriers; and Suppliers); Technical factors (ICT infrastructure; Purchase, Implementation and integration cost; System evaluation and selection criteria; Complexity; Integration; Vendor after sale support; and Software selection criteria); Data quality (Evaluation of the Data Quality Tools & Processes; Evaluation of the quality of customer data; Customer data infrastructure; Customer data types classification; and Customer data sources classification); Leadership of the top management, human resource management, functional integration, and organizational structure



Authors	Type/phase of CRM	Factors
(Arab et al. 2010)	CRM implementation	Process (marketing, sales, services, define and communicate CRM strategy, customer involvement, personalization process, time and budget management), Human (Client Aspects, Organizational Aspects, Top management commitment and support, Define and communicate CRM strategy, Assurance of top management commitment for CRM), Technology (Sales force automation, Software for CRM, Data warehouse and data mining, Help desk, Call centers, Internet influence)
(Rahimi et al. 2009)	CRM implementation, project and system	Implementation CRM (Organizational culture, User-friendly system, Easy to manage system, Top management support and implemented modules, flexibility in adaption of working & management process), Organizational aspects CRM project (workers' attitude towards the system), Technical aspects of CRM project (Scope, Implementation according to planned schedule, Implementation according to planned budget, Modules crucial to the system's implementation),
(Tan et al. 2002)	CRM implementation	Customer-centric strategy, commitments from people, improved or redesigned process, software technology and infrastructure
(Garrido-Moreno & Padilla-Meléndez 2011)	CRM success	Organizational factors (employees, leadership, organizational structure)
(Croteau & Li 2003)	CRM technological initiatives	Operational and strategic perceived benefits, top management support, organizational readiness, knowledge management capabilities

## CASE STUDIES

### CASE STUDY 1

Retail company is selling food and other household goods and therefore has an extremely large number of customers, which in turn also means that the organization has a wide variety of data. Their data is generated using the operational CRM solution. They decided to use CRM solution in order to compare the information about the contents of the shopping basket with the payment platform of a client (e.g. the amount of purchase, point of sale, collection of bonus points, the content of purchase, etc.). The reasons for using CRM solution is to monitor customer purchase behavior. The organization has to obtain information about the consumer buying habits and needs. As the organization processes a great volume of data, they strive to manage information in the most readable and usable manner at the same time.

Based on the data obtained with the help of CRM solution they form differentiated messages (called »benefits«) and sales channels. CRM solution is also associated with the contact center that deals with potential customers complaints. Besides this, an important advantage of using CRM solution is also the tracking of customer buying habits. The use of CRM solution means that smart business decisions can quickly be made and put into action; and what is more, they also stressed out that the advantage of CRM solution is a rapid response to customer behavior. Yet on the other hand the disadvantage of CRM solution is a large-scale data of an organization together with the effective management of this data. The application of CRM solution to other business

processes within the organization also offers many possibilities. It is particularly useful for marketing campaigns, in creating pricing models, and for the assignment of products to organizational units.

Conditions that have to be met for the use of quantitative methods CRM solution are entirely dependent on the objectives of organization projects. An important role in this process is played by the parties involved in the project, assumptions, cooperation of project parties, discussion about the project, the needs of the head of business analysis, experts in economics, a way of displaying data, etc. The employees think that there is a lack of expert staff in the field of quantitative methods of CRM solution. In any event, the stance of the organization is also important. The customer is of the utmost importance to the organisation, followed by further processing, innovative approach and technological orientation. The urgency of the transformation of data into a readable format presents the priority task for the organization though (due to the large number of data). They are aware of the diversity of customers and their needs. With the help of quantitative methods segments of customers may be developed, and the data can be displayed in different ways.

The organization most often classifies the customers into certain groups according to various variables such as income, region, and similar and use cluster analysis to do that. They also use a time series, regression analysis, logistic regression, rather than using factor analysis. When they determine certain characteristics of the customers, this is being generalized to the whole population, such as, for example, if some data about a certain group is missing (e.g. number of children). CRM solution outputs represent a variety of presentations that are designed for top and middle management. The heads of departments then prepare an analysis in the form of Excel documents (e.g. in tabular form). CRM solution analyses are also forwarded to the department for brand management. The ORAC software support is being used less and less by the organizations. The analyses are also forwarded to the project managers and heads of organizational units, and can be a good tool for effective forecasting. The analyses are prepared for sectorial meetings, which are suitable for comparing marketing campaigns. The organization has expressed the opinion that the use of quantitative methods requires skills in mathematics and statistics. In the context of the analysis the average value of the total amount (sale), standard deviation, and structural proportions are usually calculated. So this field expertise is required by the employees at higher levels in the organization. The employees at a lower (content) level typically require programming skills that support SQL or Excel. The organization endeavors to establish standardization, especially in the field of presenting data, in order to facilitate tracking of this data.

The organization is engaged in the search for new methods of CRM solution. The department of CRM employs two analysts, who, among other things, monitor the latest developments in the field of quantitative methods. The director of CRM and the executive director of CRM are also responsible for monitoring developments in the field of CRM solution and they search for different models (e.g. customer lifetime value). They are acquainted with contemporary articles on the subject, and cooperate with the faculties and students. They also attend conferences abroad, but they do that less and less. The efficiency of CRM solution quantitative methods depends entirely on the purpose of its application. The organization emphasizes SQL software support and in-depth analysis using data mining (data display), with a leased license to use the software support. The organization perceives two directions of the complexity. The first one represents the profession of analysts, which emphasizes the role of mathematics, and the other represents content analysis, which is considered to be still developing. At the same time the organization points out that there is still much room for the in-depth application of CRM solution quantitative methods. The organization makes intensive use of CRM solution quantitative methods besides carrying out the research that uses quantitative methods and they also devote significant resources to it.

In the future, the organization intends to use more quantitative methods of CRM solution. In particular, it intends to focus on forecasting using the events that have occurred. Standardization will have a greater role and they will adapt it according to the geographical aspect of the market. In particular, it will focus on the integration of CRM solution in the field of logistics (the supply of optimal quantities of perishable products).



## CASE STUDY 2

The organization is one of the major financial institutions and is one of the pillars of the Slovenian financial system. The organization is still evolving the CRM solution which plays an important role in recognizing sales opportunities, provides the data support and the support in organizing contacts with customers, including a contact center, and it offers monitoring of customers. With the help of CRM solution, the organization can determine whether their marketing activities have been successful, and it can influence the achievement of sales objectives. The organization places great emphasis on the use of CRM solution as a whole, as they have clearly set their strategic directions and their integration into the overall strategy of the organization. They have a clear picture of the architecture of CRM solution, as well as a record of the process of the implementation of CRM solution. The employees in the CRM solution sector have undertaken numerous activities, and they especially highlight the monitoring of the customer base with the help of different criteria and the transfer of clients between sales channels, with the aim to obtain feedback on the customers. They use CRM solution in order to be able to realize their business plan. There are many advantages and disadvantages of using CRM solution, as perceived by the organization, and as the former they expose the database which makes the reaching of the target customer groups as well as fulfilling sales objectives together with the reporting easy. As the weaknesses the employees perceive the timing of the data, being aware that the data can quickly become outdated, which means that the organization is bound to continuously update their database. The need to obtain more and more data is increasing, so the employees are often faced with the problem of how to obtain a certain data type or how to provide the accurate information. In addition to the weaknesses mentioned above, there is also a shortage of expert personnel in the field of CRM solution.

CRM solution is used for other business processes in the organization, particularly in their marketing activities, online activities, for obtaining information, and for the monitoring of the use of information systems. The organization very closely follows the performance on the different levels of management and business areas. They monitor the gaining and losses of the customers, the economic value of customers, customer satisfaction, but they point out that they do not monitor customer satisfaction at the moment the service is being provided by the organization (e.g. a new access to online business), because in this way they would perceive the immediate customer satisfaction. The organization monitors the successfulness and efficiency of the use of CRM solution with the help of their marketing activities. Different levels in the organization have access to certain data, depending on their work activities. The organization's management strongly supports CRM solution and recognizes the importance of the employees who are in charge of the databases at different levels. The other employees (e.g. commercialists and other sales staff) regularly monitor the database. According to the opinion of the employees CRM solution can be used by any organization that is information technology, organization and marketing oriented. In order to be able to apply CRM solution quantitative methods, an organization requires customer information, so they have to encourage the customers to provide them with useful information. One of the benefits of CRM solution quantitative methods in an organization is a possibility to predict the loss of customers.

Quantitative methods, listed by the organization and used in CRM solution are segmentation, cross-selling, customer analysis (e.g., tracking consumer's past purchasing behavior), time series monitoring, based on which they monitor the sales by product and the gain and loss of the customers. The organization also carries out ad-hoc analyses on different levels (e.g. administration, commercial department), and it also monitors the economic value of their customers. The organization points out that the application of CRM solution quantitative methods requires software support such as SQL, data mining, Excel and Excess, statistics (time series, descriptive statistics, correlation, etc.), IBM Unica software support (for customer data analyzing), informatics and financial services in order for the employees to be able to understand the mining and data. The software support needed to use CRM solution quantitative methods as SQL, are IBM Unica, Excel, and also mastering of the programming language and the OLAP. The organization stated that they use medium complexity of the application of quantitative methods CRM solution, which in many cases depends on the time of data preparation for the analysis and on the needs of the employees. They also make reports upon the requests by their employees. The intensity of the use of CRM solution quantitative methods in the organization is understood as the frequency of use of quantitative methods (e.g., daily use). In the future, they plan to use the CRM solution quantitative methods more extensively for integrating tools, data mining, the development of in-depth analyses or the purchase of software support for in-depth analyses.





## CONCLUSION

On the basis of three basic research questions it can be confirmed that the Slovenian organizations, despite their size, their involvement in international environment and their development of information technology (IT), are lagging behind in developing CRM solution as a whole, and even more so in developing CRM solution. This is also reflected through the research done on the use of CRM solution in Slovenia (Potočan et al. 2012). There is still a prevalent belief that CRM solution is a technological and technical solution that facilitates the establishment and development of relations between the organization and customers. The organizations highlight its use as for the operation of call centers, e-commerce with customers, data mining, analytical activities, and preparation of reports. However, it can be noticed that the analytical activities are carried out at the basic level and they lack deeper analysing that would offer quality findings for making strategic business decisions. Organizations are too concerned with the standardization of analytical activities and much less with the verification of innovative analytical approaches through simulations of the new statistical and analytical software support. We believe that the scope of innovative analytical approaches in Slovenian organizations is rather narrow. As the reasons for the serious shortage of use of CRM solution, organizations expose the lack of personnel skilled in statistics, data mining, understanding the data contents, and statistical programming support. The organizations do not exploit quantitative methods in CRM solution sufficiently because they are not familiar enough with it, and do not have adequate staff to make use of quantitative methods in the context of data mining. As quantitative methods organizations understand the time series, segmentation, regression and correlation. Other forms of quantitative methods are not used by the organizations and they actually are not familiar with them. Based on analysing the data in our in-depth interviews, we have come to the conclusion that the Slovenian organisations have a lot of untapped potential in the use of CRM solution and quantitative methods which could lead to significant findings for making business decisions. The organizations neither have one single definition of CRM solution nor have a department that would work only with CRM solution and quantitative methods. They do not have statistical programming support to help them use quantitative methods since they still mainly use Excel software support. They conduct analyses, but these are not in-depth analyses and they do not offer suggestions for strategic direction. Nevertheless, the management and the employees support the further development and the use of CRM solution and quantitative methods, and are also oriented towards using new statistical programming support in the future. The key factors that have been exposed by the organizations in the application of quantitative methods of the CRM solutions are the personnel who would need to have good knowledge and understanding of statistics, informatics, mathematics, economics and organizational orientation, customer service skills and to be able to work with IT. The findings are important both for other organizations using CRM solution as well as for the providers of CRM solutions. Using data mining techniques and business intelligence in the context of CRM solution can have a significant impact on the organization's performance (Phan & Vogel 2010).

The restrictions were mainly concerned with the willingness of the employees to cooperate and provide information. We had to limit ourselves to the time of conducting the interview and to the interview questions asked. The study was limited to CRM solution, implemented by the organization or being only developed at the moment, and we included two large Slovenian organizations in our in-depth interview. In the future, it is necessary to redirect the search and explore the answer to the question of how organizations perceive the use of quantitative methods in CRM solution and software packages that support quantitative methods. In the future, also the research into the customer data processing, customer data analysis, and the use of analytical software support as well as quantitative methods is needed. Depending on the needs of organizations, researchers will have to deal with the issue of how to design the parameters for organizations to measure the effectiveness and efficiency of CRM solutions. We especially need to focus on the exploration of new statistical programming support, connected with the new information technologies (the internet, mobile telephony, social media), which will be integrated into the operating systems of the organizations in such a way that the data obtained through the use of quantitative methods is going to be automatically converted into useful analysis, relevant to making business decisions. Not only the customer data on the existing customer created within the organization is going to be important in the future, but also the data on potential customers, acquired by new information and communications technologies.



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# Social Entrepreneurship as a Way for Overcoming Social Exclusion

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## *ABSTRACT*

Interest in social entrepreneurship has grown steadily in the past decades worldwide. In the literature we can find different definitions of social entrepreneurship. Although there is no universal definition of social entrepreneurship, most of them have common characteristics, which are presented through this paper.

The problem of social exclusion is appearing all around the world, in last decade provoked and expanded by global crisis. The paper focuses on social exclusion on the territory of Republic of Bosnia and Herzegovina as a drastic consequence of political crisis, which escalated into war. Because of that the marginalization of population accelerated. Marginalized groups: women, youth, persons with disabilities and Roma (because of their subordinate role in traditional society) as well as unemployed adults have fewer possibilities for employment and worse social and economic status as before the war. The EU practice shows that social entrepreneurship is a good instrument for eliminating poverty, social exclusion and unemployment. Social entrepreneurship as a multifaceted concept has proved itself as a way suitable for solving these problems. The forms of social enterprises offer possibilities also less educated persons to join them for covering their social and economic needs. For that reason we decided to include these vulnerable groups into empirical research as potential users of services offered by social enterprises and important stakeholders of social entrepreneurship.

*Key words: entrepreneurship, social entrepreneurship, social exclusion, self-employment*

## INTRODUCTION

Although social entrepreneurship has a long heritage, different views and concepts can be found in scientific and professional literature. Most of them are focused on the meaning and starting from similarities and differences of traditional and social entrepreneurship. Bosnia and Herzegovina has a great need to solve social and economic problems and at the same time a modest research experience on social entrepreneurship. This is the reason why we, primarily, explored definitions and concepts of social entrepreneurship and the key understanding of this phenomenon.

The practical part included exploration of the needs for solving social exclusion, poverty and unemployment problems, and the possible ways of overcoming these problems through social entrepreneurship. Therefore, in the first part of the paper we present current definitions and comprehension of social entrepreneurship, as well as key trends and figures in the development of social entrepreneurship in EU. Furthermore, we present the results of the research part of the work, which were the basis for writing conclusions.

## CONCEPT OF SOCIAL ENTREPRENEURSHIP – UNDERSTANDING AND CURRENT VIEWS

Social entrepreneurship is a human concept of activity, which was popularized in the 21st century, although it actually dates back from the very beginning of the development of entrepreneurship. It is part of the social economy, which is based on completely different principles of neoliberalism - the concept which is characterized by the idea of magnification profits, lack of social responsibility and aspirations to power. The most important characteristics of social entrepreneurship is that solidarity, trust and social justice are in its basis (Šimundža 2014).

Conceptualization of social entrepreneurship has intensified in the last thirty years, parallel with the development of practice. The importance of social entrepreneurship and its advantages over traditional entrepreneurship emphasized the most influential theorists (Joseph Schumpeter, Peter Drucker and others) since the twentieth century. Although scientists have proposed a number of definitions of social entrepreneurship in the research community, there is no universally accepted definition of it.

Mair and Marti (2004) cite that probably the greatest challenge in understanding social entrepreneurship lies in defining the boundaries of what we mean by social (with reference to Seelos and Mair 2005a). They cite that term “social”, viewed broadly, refers to initiatives aimed to helping others (Prabhu 1999, in Mair and Marti 2004).

Mair and Marti (2004) argue that the main difference between entrepreneurship in the business sector and social entrepreneurship lies in the relative priority given to social wealth creation versus economic wealth creation. In business entrepreneurship, social wealth is by-product of the economic value creation, in social entrepreneurship the main focus is on social value creation. This does not mean that social entrepreneurship initiatives should not embrace an “earned income” strategy, quite the opposite.

Light (2006) argued for a more inclusive definition. He defined social entrepreneurship as the effort of an individual, organization, network, or group of organizations to create large-scale, sustainable change by shifting an approach to solving social problems. He argued against the notion of a heroic, risk-taking individual, forwarding instead a concept that celebrates working together in novel ways to solve social problems (Berzin 2012).



According to Yunus (2009), social entrepreneurship is often defined as any effort to help other people. This initiative may be economic and non-economic character, profit and non-profit. Giving free drugs to patients is one example of social entrepreneurship. Established medical center in the village where there is no health institution is also an example of social entrepreneurship.

Social entrepreneurship is still emerging as an area for academic inquiry. Its theoretical frameworks have not yet been adequately explored, and there is considerable room for contributions to theory and practise. Research on this subject has increased over the last 10 years and there is a considerable body of literature concerned with its definitions, the social value creation, motivations and case studies (Fayolle and Matlay 2010).

In parallel with the number of articles in the public press and journals, the number of definitions used to describe the phenomenon of social entrepreneurship has also notably increased. Social entrepreneurship means different things to different people. It also means different things to people in different places. Social venturing, non-profit organizations adopting commercial strategies, social cooperative enterprises and community entrepreneurship are just some of the distinct phenomena discussed and analysed under the „umbrella construct“ of social entrepreneurship (Ibidem).

## KEY TRENDS AND FIGURES IN THE DEVELOPMENT OF SOCIAL ENTREPRENEURSHIP IN EU

According to Chaves and Campos (2008), the definition of social economy implies private, formally-organized enterprises, with autonomy of decision and freedom of membership, created to meet their members' needs through the market by producing goods and providing services, where decision-making and any distribution of profits or surpluses among the members are not directly linked to the capital or fees contributed by each member, each of whom has one vote. Despite this market segment, the social economy also includes private, formally-organized, organizations with autonomy of decision and freedom of membership that produce non-market services for households and whose surpluses, if any, cannot be appropriated by the economic agents that create, control or finance them.

Social entrepreneurship is in most European countries developed in response to the growing social and economic problems, especially social exclusion. Social exclusion is a process whereby certain individuals are pushed to the edge of society and prevented from full participation in society because of their poverty or lack of basic knowledge and opportunities for lifelong learning, or as a result of discrimination. This distances them from job, income and education opportunities as well as social networks, frames and community activities. These individuals have little access to power and decision-making bodies and thus often feel powerless and unable to take control over the decisions that affect their daily lives (SeCons 2011).

In many countries, in addition to creation of new forms and legal framework, during the 90s the development of special public programs that are targeted to the field of labor integration was recognized. This, even in more cases, led to the systematic binding social enterprise initiatives for job creation. The European Commission conducted a study „The practices and policies in the field of social enterprise in Europe“, which was released in 2007. It represents key characteristics of social enterprise sector and identified relevant measures to support social enterprises in the thirty of European countries, including a selected group of good practices for the promotion of social enterprises (Austrian Institute for SME Research, TSE Entre, Turku School of Economics 2007).

Social enterprises are important actors in social and economic development at the EU level. According to data from the European Commission (2015), social enterprises make up 10% of the total number of enterprises in the European Union level, and are present



in almost all sectors: banking, insurance, agriculture, various commercial services, health and social services, etc. The employees of social enterprises EU account for about 6% of total employment in the EU. It is observed a tendency of constant increase in the number of employees in this sector.

The social economy has contributed to creating new jobs, retaining jobs in sectors and businesses in crisis and/or threatened by closure, increasing job stability levels, bringing jobs out of the black economy into the official one, keeping skills alive (e.g. crafts) and exploring new occupations (e.g. social educator) and developing routes into work for groups that are especially disadvantaged and falling into social exclusion. Over the last few decades statistical data have shown that it is a powerful job-creating sector in Europe, with greater sensitivity to employment than the other sectors of the economy (Chaves and Campos 2008).

## EMPIRICAL RESEARCH ON SOCIAL ENTREPRENEURSHIP IN BOSNIA AND HERZEGOVINA

In Bosnia and Herzegovina, the concept of social entrepreneurship is in the initial stage of recognition. Social entrepreneurship is a relatively new phenomenon in social and economic activities, covering different areas of human, economic and social activity. The term “social entrepreneurship” is often identified with the activities related only to providing social assistance. It is important to bear in mind that the social service sector is only one of the possible areas of social entrepreneurship activities.

Persons with disabilities are among the most excluded and the poorest social groups in Bosnia and Herzegovina. Roma are the largest minority in Bosnia and Herzegovina of 17 national minorities (Council of Ministers of Bosnia and Herzegovina 2005). Although the Law on Gender Equality is in force since 2003, women are de facto marginalized social group in the Republic of Srpska / Bosnia and Herzegovina (Gender centre of the Government of the Republic of Srpska 2011). Over 50% of young people in Bosnia and Herzegovina are unemployed which is a huge social problem (Youth Employment Project 2013).

Social entrepreneurship, in the context of this research, phenomenological is viewed through:

- Inclusion of marginalized groups in entrepreneurial activity;
- Perception of entrepreneurship as a way to achieve social inclusion by marginalized groups;
- Possibilities to meet different needs within the wider scope of activities of social entrepreneurship, depending on the specific socio-economic positions on the basis of membership of a particular social group.

Bearing in mind findings on the extent of social exclusion in Bosnia and Herzegovina, we developed research hypotheses and sub-hypotheses as follows:

**H1: Marginalized groups perceive entrepreneurship as a mechanism for overcoming social exclusion.**

**H2: Affiliation to different marginalized groups is related to different views at the most important issues and the need for the development of entrepreneurship.**



H2.1. Among the members of various marginalized groups, there are statistically significant differences in terms of interest in employment in a full-time and at half-time, interest in working in a private company and interest in working in state-owned enterprise.

H2.2. Among the members of various marginalized groups, there is a statistically significant difference in terms of attitude toward own entrepreneurial activities as a way to overcome social exclusion.

H2.3. Among the members of various marginalized groups, there is a statistically significant difference in their opinions about the importance of free counseling and education, as variables that can contribute to entrepreneurship.

In order to verify the hypotheses, a survey of members of marginalized groups on their interest and potential for overcoming social exclusion through entrepreneurship was conducted. In order to reach the planned number of respondents, 412 questionnaires were sent to unemployed persons from marginalized groups: women, youth, persons with disabilities and Roma, throughout Republic of Srpska (40 municipalities), in cooperation with NGOs and Employment Service of the Republic of Srpska. Questionnaires were sent electronically, whereupon we received completed questionnaires, also electronically (by e-mail, on CD and USB in cooperation with NGO activists). 99% of the respondents at the time of the survey were unemployed, and only 1% is sometimes engaged through projects in NGOs (but not employed).

The survey was conducted from July 2013 to May 2014.

Gender structure of the respondents covers 202 women and 198 men. The structure of the respondents belonging to the target groups is the following: women (44%), youth (28%), persons with disabilities (17%) and Roma (11%), including women in all of groups.

Most of the respondents have completed high school (40%), and slightly less have completed faculty (37%). 23% of the respondents have completed college.

Age of respondents is between 24 and 55 years. Age structure of respondents included groups of 24-35, 36-45 and 46-55. 59% are from the group of 24-35 years, 31% from the 36-45 group and 10% from the 46-55 group.

Based on the areas in which they live, the majority of respondents is from rural parts (219 persons or 54.75%), while 181 (45.25%) respondents are from urban parts - cities.

The collected data were processed in Statistical Package for the Social Sciences - SPSS statistical program, for the purpose of verification of the hypotheses H1 and H2, as well as related sub-hypotheses.

The questionnaire consisted of 10 questions pertaining to sociodemographic characteristics, interest in social inclusion through employment or self-employment, self-employment motives, views on ways to achieve full social integration and security, assessing the development of social entrepreneurship, assess the potential and the tendency of respondents to entrepreneurship, and their assessment of the importance of key variables that may contribute to the development of entrepreneurship. The basis for the design of the questions/statements in the questionnaire were research instruments from previous activities conducted in the field of social entrepreneurship - the project „Business compass“ (Association Fontana 2013) implemented in Bosnia and Herzegovina, and first Study of needs for the development of social entrepreneurship (Humanitarian organization Partner 2008) which will provide services for working occupation and employment of persons with disabilities in the City of Banja Luka.

Descriptive statistics and the tests for comparing more than two independent samples were used to verify the hypotheses. The measures of central tendency and frequency analysis were used to verify the hypothesis H1. Furthermore, due to the fact that the data is based on an ordinal scale (interest in social inclusion through employment or self-employment, importance of individual variables that contribute to entrepreneurship), or when based on an interval scale is not normally distributed (opinions on the



development of social entrepreneurship, attitudes and potential of marginalized groups for entrepreneurship), we used Kruskal-Wallis and Mann-Whitney tests to examine whether the attitudes of respondents differ according to their attitudes, interests and potentials related to entrepreneurship, to verify the hypothesis H2.

*Table 1: Results of research of interest in social inclusion through employment or self-employment*

Item	Descriptive statistics						Frequency analysis									
	N	M	Me	$\sigma$	Sk	Ku	Not interested		Partially interested		Hesitant		Interested		Very interested	
							f	%	f	%	f	%	f	%	f	%
Interest in employment in a full-time	400	4.71	5.00	0.46	-1.00	-0.77	0	0	0	0	1	0.3	114	28.5	285	71.3
Interest in employment at half-time	400	3.11	3.00	1.08	0.53	-0.59	10	2.5	111	27.8	176	44	30	7.5	73	18.3
Interest in self-employment	400	3.62	4.00	1.34	-0.52	-0.99	34	8.5	61	15.3	76	19	82	20.5	147	36.8
Interest in working in a private company	400	3.84	4.00	0.91	-0.42	-0.59	0	0	36	9.0	92	23.0	171	42.8	101	25.3
Interest in working in state-owned enterprise	398	3.40	4.00	1.40	-0.37	-1.16	52	13.1	64	16.1	73	18.3	90	22.6	119	29.9

N= Number of respondents; M = Mean; Me= Median;  $\sigma$  =Standard deviation; Sk =Skewness; Ku = Kurtosis; F= Frequency

Based on the results presented in Table 1, it is evident that the respondents are mostly interested in employment in a full-time (71.3% of respondents are very interested and 28.5% interested), while they are less interested in employment at half-time (18.3% of respondents are very interested and 7.5% interested). Interesting information for this work is high interest of respondents for self-employment (36.8% of respondents are very interested). Considering the interest in working in the private or state-owned enterprise, a high level of interest for the work in both type of companies is noticeable.



**Table 2: Results of research of opinions on the development of social entrepreneurship, attitudes and potential of marginalized groups for entrepreneurship**

Item	N	Descriptive statistics					Frequency analysis										
		M	Me	$\sigma$	Sk	Ku	Strongly disagree		Partially disagree		Neither agree nor disagree		Partially agree		Strongly agree		
							f	%	f	%	f	%	f	%	f	%	
Familiar with the concept of social entrepreneurship	397	3.13	3.00	0.98	0.70	-0.93	7	1.8	118	29.7	115	29.0	129	32.5	28	7.1	
Socio-economic environment is not encouraging self-employment	397	1.2	1.00	0.49	2.98	10.98	329	82.9	61	15.4	3	0.8	4	1.0	0	0	
Social entrepreneurship is recognized as a source of employment opportunities	397	2.64	3.00	0.80	0.16	-0.65	20	5.0	166	41.8	148	37.3	63	15.9	0	0	
Institutions of the system encourages the development of social entrepreneurship	396	2.06	2.00	0.77	0.66	0.44	85	21.4	228	57.4	61	15.4	23	5.8	0	0	
The connection between education and the labor market is good	395	2.76	3.00	0.70	-0.79	0.83	26	6.6	77	19.4	258	65.2	35	8.8	0	0	
I would launch my own business if I had financial incentives	396	3.41	3.00	0.91	0.33	0.20	10	2.5	15	3.8	244	61.8	55	13.9	71	18.0	
I miss the knowledge and skills to be engaged in entrepreneurship	396	2.40	2.00	0.72	0.28	-0.10	29	7.3	206	52.0	136	34.3	25	6.3	0	0	
Entrepreneurship is a desirable career choice for me	396	3.46	3.00	1.18	0.09	-1.40	3	0.8	102	25.8	117	29.5	59	14.9	115	29.0	
Entrepreneurship can contribute to reduction of social problems, especially social exclusion	396	4.63	5.00	0.67	-2.35	6.95	2	0.5	7	1.8	9	2.3	98	24.7	280	70.7	

N= Number of respondents; M = Mean; Me= Median;  $\sigma$  =Standard deviation; Sk =Skewness; Ku = Kurtosis; F= Frequency



Table 2 shows that a small part of respondents strongly agree that they are familiar with the concept of social entrepreneurship (7.1%). 32.5% of the total number of respondents only partially agree that they are familiar with the concept of social entrepreneurship.

41.8% of respondents partly disagree with the statement that social entrepreneurship is recognized as a source of employment opportunities, while 37.3% are undecided on this issue.

With the statement that the institutions of the system encourage the development of social entrepreneurship partially disagree 57.4% of respondents, while 21.4% strongly disagree with this statement.

The largest part of respondents is undecided on the statement that the link between education and the labor market is good (65.2%).

Also, a large part of respondents (61.8%) is undecided on the issue of attitude to start their own business, if there are financial incentives. 29% of respondents strongly agree that entrepreneurship represents a desirable career choice for them. 14.9% of respondents partially agree that entrepreneurship represents a desirable career choice for them.

Furthermore, a considerable part of respondents (34.3%) is undecided about missing the knowledge and skills of entrepreneurship.

70.7% of respondents strongly agree with the statement that entrepreneurship can contribute to the reduction of social problems, especially social exclusion. 24.7% of respondents partially agree that entrepreneurship can contribute to the reduction of social problems, especially social exclusion.

**Table 3: Results of research of importance of individual variables that contribute to entrepreneurship**

Item	N	Descriptive statistics					Frequency analysis									
		M	Me	$\sigma$	Sk	Ku	Not important		Not very important		Moderately important		Very important		Extremely important	
							f	%	f	%	f	%	f	%	f	%
Soft loans from commercial banks	396	4.57	5.00	0.46	-0.981	-0.03	0	0	0	0	18	4.5	134	33.8	244	61.6
Tax relief	396	4.39	4.00	0.60	-0.405	-0.67	0	0	0	0	24	6.1	195	49.2	177	44.7
Free counseling and education	396	3.25	3.00	0.73	0.822	0.69	0	0	37	9.3	256	64.6	71	17.9	32	8.1
Assistance in the performance of the market	396	2.97	3.00	0.79	0.55	0.99	6	1.5	87	22.0	237	59.8	43	10.9	23	5.8
Exemption from taxes	396	3.89	4.00	0.96	0.94	0.70	9	2.3	30	7.6	60	15.2	192	48.5	105	26.5

N= Number of respondents; M = Mean; Me= Median;  $\sigma$  =Standard deviation; Sk =Skewness; Ku = Kurtosis; F= Frequency

The mean values in Table 3 show that, on average, respondents think that soft loans from commercial banks, tax reliefs and exemptions from taxes are extremely important incentives that could contribute to the development of entrepreneurship, while a free consultation and education and assistance in the performance of the market are identified as moderately important.



Main results go in favor of confirming the hypothesis H1: Marginalized people perceive entrepreneurship as a mechanism for overcoming social exclusion:

- 36.8% of respondents are very interested for selfemployment;
- 29% of respondents strongly agree that entrepreneurship represents a desirable career choice for them. 14.9% of respondents partially agree that entrepreneurship represents a desirable career choice for them;
- 70.7% of respondents strongly agree with the statement that entrepreneurship can contribute to the reduction of social problems, especially social exclusion;
- 24.7% of respondents partially agree that entrepreneurship can contribute to the reduction of social problems, especially social exclusion.

We used Kruskal-Wallis test to examine whether the attitudes of respondents differ according to their interest in social inclusion through employment or self-employment, whether their views on the development of social entrepreneurship, preferences and potential for entrepreneurship and attitudes toward the importance of individual variables that contribute to entrepreneurship differ.

In this paper we present the results regarding differences in attitudes on these issues perceived with respect to the affiliation of the target group (women, youth, persons with disabilities, Roma).



*Table 4:* Interest in social inclusion through employment or self-employment with respect to the target group affiliation - Kruskal-Wallis test

Item	Affiliation to the target group	N	Mean Rank	Me	M	$\chi^2$	df	p
Interest in employment in a full-time	women	174	214.43	5.00	4.78	23.483	3	.000
	youth	114	166.50	5.00	4.54			
	persons with disabilities	69	220.41	5.00	4.81			
	Roma	43	202.33	5.00	4.72			
	Total	400		5.00	4.71			
Interest in employment at half-time	women	174	196.78	3.00	3.07	21.590	3	.000
	youth	114	233.97	3.00	3.48			
	persons with disabilities	69	158.01	3.00	2.67			
	Roma	43	195.01	3.00	3.02			
	Total	400		3.00	3.11			
Interest in self-employment	women	174	212.93	4.00	3.76	6.684	3	.083
	youth	114	178.54	3.00	3.35			
	persons with disabilities	69	204.76	4.00	3.70			
	Roma	43	201.56	4.00	3.60			
	Total	400		4.00	3.62			
Interest in working in a private company	women	174	190.57	4.00	3.77	9.637	3	.022
	youth	114	227.14	4.00	4.07			
	persons with disabilities	69	191.88	4.00	3.72			
	Roma	43	183.90	4.00	3.72			
	Total	400		4.00	3.84			
Interest in working in state-owned enterprise	women	173	199.51	2.00	2.19	7.661	3	.054
	youth	114	219.81	4.00	3.68			
	persons with disabilities	69	180.75	3.00	3.14			
	Roma	42	175.13	3.50	3.10			
	Total	398		4.00	3.40			

N= Number of respondents; Mean Rank - Arithmetic mean of the rankings; Me = Median ; M = Mean;  $\chi^2$  -Chi-Square; df -Degree of freedom; p -The level of significance

Table 4 shows that differences in interest in self-employment are not statistically significant ( $p > 0.05$ ), while the differences in all other interests within this issue are statistically significant ( $p < 0.05$ ).

Greatest interest in employment in a full-time have persons with disabilities, than women. Greatest interest in employment at half-time have youth. When it comes to interest in self-employment, it is evident that women are the most interested for this form of employment. Youth have the most positive opinion towards work in private company. They are also most interested to work in a state-owned company.



*Table 5: Assessing the development of social entrepreneurship, attitudes and potential of marginalized groups for entrepreneurship with respect to the target group affiliation - Kruskal-Wallis test*

Item	Affiliation to the target group	N	Mean Rank	Me	M	$\chi^2$	df	p
Familiar with the concept of social entrepreneurship	women	172	196.52	3.00	3.11	.426	3	.935
	youth	113	198.92	3.00	3.13			
	persons with disabilities	69	199.23	3.00	3.13			
	Roma	43	208.73	3.00	3.23			
	Total	397		3.00	3.13			
Socio-economic environment is not encouraging self-employment	women	172	199.80	1.00	1.21	.169	3	.983
	youth	113	197.79	1.00	1.17			
	persons with disabilities	69	197.07	1.00	1.20			
	Roma	43	202.10	1.00	1.23			
	Total	397		1.00	1.20			
Social entrepreneurship is recognized as a source of employment opportunities	women	172	198.33	3.00	2.63	.197	3	.978
	youth	113	202.57	3.00	2.66			
	persons with disabilities	69	196.66	3.00	2.62			
	Roma	43	196.06	2.00	2.63			
	Total	397		3.00	2.64			
Institutions of the system encourages the development of social entrepreneurship	women	172	196.88	2.00	2.03	2.585	3	.460
	youth	113	202.37	2.00	2.12			
	persons with disabilities	69	210.67	2.00	2.13			
	Roma	43	179.91	2.00	1.88			
	Total	397		2.00	2.06			
The connection between education and the labor market is good	women	172	189.46	3.00	2.70	5.666	3	.129
	youth	113	216.03	3.00	2.89			
	persons with disabilities	68	198.56	3.00	2.74			
	Roma	43	188.49	3.00	2.70			
	Total	396		3.00	2.76			
I would launch my own business if I had financial incentives	women	172	200.94	3.00	3.45	14.541	3	.002
	youth	113	215.76	3.00	3.58			
	persons with disabilities	67	158.30	3.00	3.03			
	Roma	43	201.41	3.00	3.40			
	Total	395		3.00	3.41			
I miss the knowledge and skills to be engaged in entrepreneurship	women	172	194.88	2.00	2.38	6.029	3	.110
	youth	113	194.76	2.00	2.35			
	persons with disabilities	68	224.96	2.00	2.60			
	Roma	43	180.99	2.00	2.28			
	Total	396		2.00	2.40			

Item	Affiliation to the target group	N	Mean Rank	Me	M	$\chi^2$	df	p
Entrepreneurship is a desirable career choice for me	women	172	201.20	3.00	3.49	2.362	3	.501
	youth	113	185.64	3.00	3.34			
	persons with disabilities	68	207.41	3.00	3.53			
	Roma	43	207.40	3.00	3.53			
	Total	396		3.00	3.46			
Entrepreneurship can contribute to reduction of social problems, especially social exclusion	women	172	201.41	5.00	4.69	3.026	3	.388
	youth	113	206.14	5.00	4.66			
	persons with disabilities	68	185.14	5.00	4.56			
	Roma	43	187.90	5.00	4.44			
	Total	396		5.00	4.63			

N= Number of respondents; Mean Rank - Arithmetic mean of the rankings; Me = Median ; M = Mean;  $\chi^2$  -Chi-Square; df -Degree of freedom; p -The level of significance

Table 5 shows that differences in most attitudes within this issue are not statistically significant ( $p > 0.05$ ). Within attitudes on starting own business, if there are financial incentives, the differences are statistically significant ( $p < 0.05$ ).

Youth have the most positive opinion on launching own business, if there are financial incentives. Entrepreneurship is most desirable career choice for persons with disabilities and Roma. It can be assumed that this response is due to hard socio-economic status of persons with disabilities, due to which these individuals often only chance see in entrepreneurship, because of the nature of their condition, but also the general situation in the country. Women have the most positive attitudes towards entrepreneurship as a way that can contribute to reduction of social problems, especially social exclusion.





*Table 6: The importance of variables that contribute to entrepreneurship with respect to the target group affiliation - Kruskal-Wallis test*

Item	Affiliation to the target group	N	Mean Rank	Me	M	$\chi^2$	df	p
Soft loans from commercial banks	women	172	193.83	5.00	4.55	4.251	3	.236
	youth	113	214.27	5.00	4.65			
	persons with disabilities	68	189.43	5.00	4.51			
	Roma	43	190.08	5.00	4.51			
	Total	396		5.00	4.57			
Tax relief	women	172	191.78	4.00	4.35	7.092	3	.069
	youth	113	211.36	5.00	4.45			
	persons with disabilities	68	179.60	4.00	4.28			
	Roma	43	221.49	5.00	4.53			
	Total	396		4.00	4.39			
Free counseling and education	women	172	187.64	3.00	3.16	13.010	3	.005
	youth	113	226.24	3.00	3.47			
	persons with disabilities	68	190.01	3.00	3.18			
	Roma	43	182.48	3.00	3.14			
	Total	396		3.00	3.25			
Assistance in the performance of the market	women	172	195.11	3.00	2.97	1.272	3	.736
	youth	113	203.13	3.00	2.99			
	persons with disabilities	68	205.99	3.00	3.01			
	Roma	43	188.06	3.00	2.91			
	Total	396		3.00	2.97			
Exemption from taxes	women	172	196.90	4.00	3.92	5.751	3	.124
	youth	113	206.36	4.00	3.93			
	persons with disabilities	68	175.40	4.00	3.63			
	Roma	43	220.79	4.00	4.12			
	Total	396		4.00	3.89			

N= Number of respondents; Mean Rank - Arithmetic mean of the rankings; Me = Median ; M = Mean;  $\chi^2$  -Chi-Square; df -Degree of freedom; p -The level of significance

Table 6 shows that differences in most attitudes within this issue are not statistically significant ( $p > 0.05$ ). Within attitudes regarding the importance of free counseling and education differences are statistically significant ( $p < 0.05$ ). Youth are more inclined to a positive view of the importance of free counseling and education.

## CONCLUSION

At a time when social exclusion, poverty and unemployment are acute social problems in Bosnia and Herzegovina, social entrepreneurship can be a path and opportunity for overcoming these problems. This was confirmed by the results of research on the situation, needs and possibilities for the development of social entrepreneurship in Bosnia and Herzegovina.

It is evident that social entrepreneurship can be an effective instrument in the fight against social exclusion. Empirical research findings confirmed that marginalized groups perceive entrepreneurship as a mechanism for overcoming social exclusion (hypothesis H.1). It showed a high level of interest of marginalized in employment in a full-time, also their interest for self-employment, recognition of entrepreneurship as desirable career choice and strong agreement with the statement that entrepreneurship can contribute to the reduction of social problems, especially social exclusion.

Based on research results, we confirm hypothesis H.2 based on supporting sub-hypotheses H.2.1, H.2.2 and H.2.3. Among the members of various marginalized groups, there are statistically significant differences in terms of interest in employment in a full-time and at half-time, interest in working in a private company and interest in working in state-owned enterprise. Between attitudes of marginalized on starting own business, if there are financial incentives, we found that there are statistically significant differences. There are statistically significant differences in opinions of marginalized about the importance of free counseling and education, as variables that can contribute to entrepreneurship.

Lack of familiarity of the concept of social entrepreneurship was one of the constraints encountered during the research. Therefore we have tried to contribute with the presentation of current definitions and understanding of social entrepreneurship in the wider global context, through research work. On a practical level, we tried to overcome this circumstance by explaining the concept of social entrepreneurship in the questionnaire.

For the further development of social entrepreneurship in Bosnia and Herzegovina is necessary, above all, involvement and awareness of society about the importance and effects of this model, which can significantly be improved by promotion and education. Experience of European countries can be useful for considering the possibilities of development of social entrepreneurship, but concrete measures should be adjusted to the national circumstances.

Possible direction of further research we see through a survey of the concretization of possible new measures in the field of public policies, specific needs for knowledge and other resources necessary for employment and self-employment of marginalized groups, possibilities of improving opportunities for the activity for citizens who are involved in non-governmental organizations, and who wish to be engaged in economic activities.



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# Attitudes Toward Internet Shopping in Slovenia - A Pilot Research Study

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## *ABSTRACT*

Internet shopping is for most people no longer mysterious experience, for many of them it is preferred way to shop. People confidence when buying online has increased and their expectations are higher and higher. In internet shopping research technology-centered view and consumer oriented views for adoption of online shopping are used. The research has been based on seven most often mentioned influencing factors of internet shopping: website visibility, e-shop credibility, information comparison, payment security and privacy, website interface, convenience, educational level of user and experience with technology. In the paper findings from the survey carried on the sample of users of e-shop web sites is be presented. The study researched their attitudes toward e-shopping, characteristics how they use e-shop web sites and influence of different factors on e-shopping. Data have been collected on the basis of e-questionnaire and results have been calculated using SPSS.

*Keywords: E-business, Internet shopping, e-shops, web sites*

## INTRODUCTION

Rapid development of information technology has enabled e-business to become a global phenomenon. As the internet became more commercialized and users began to participate in the World Wide Web in the early 1990s, the term e-business was coined and e-business applications expanded rapidly (Turban et al. 2000). Organizations adopt e-business for several reasons and perceived benefits (Wang and Zheng 2011). Authors mention better management of information, better integration of suppliers and vendors, better channel partnership, lower transaction costs, improved market understanding, expanded geographical coverage (Damanpour 2001; Abid et al. 2011), trading time expanded to 24x7x365 (Tsao et al. 2004).

E-shopping, e-buying and e-purchasing are often used as synonyms for labelling e-business one of the most important area of B2C (business to customer) e-business. It is connected with e-business offered by retailers. E-shopping is for most people no longer mysterious experience, for many of them it is preferred way to shop. People confidence when buying online has increased and their expectations are higher and higher. The study conducted by J.C. Williams Group (2012) for Canada post distinguishes between online shoppers (people who research online only) and online buyers (those who also make purchases). The study also reports that the most popular categories for on line purchase are still relatively low-impact purchases (packaged goods, apparel and clothing, computers, electronic goods and books – they account for about 70% of e-purchases in 2011).

Although e-shopping offers some challenges to retailers it also offers fantastic opportunities to those retailers that can provide an exceptional customer experience. The most successful retailers will deliver excellence throughout entire shopping journey. In the paper findings from the survey carried on the sample of users of e-shop web sites will be presented. The study researched their attitudes toward e-shopping, characteristics how they use e-shop web sites and influence of different factors on e-shopping.

## E-SHOPPING AND ITS TRENDS

Research conducted by many researchers at various universities, by companies and by government agencies shows that e-business is growing and expanding very fast.

A study conducted in Europe by e-Business Watch (2008) shows that e-business activities are mainly determined by value chain characteristics and company size. Regional factors are less important in this regard. A study had concluded that on average EU companies are on same level compared with their competitors in other advanced economies in terms of electronic business activity (e-Business Watch 2008).

Another study conducted in Europe by European Communities (2008) shows big differences between different areas of e-business use in companies and shows also difference between small and big companies. They report that one of the first pieces of evidence for e-commerce activities amongst enterprises belonging to the industrial sectors selected in the EBW 2006 report is that, regardless of size, buying online is more developed than selling online. At the European level, the Internet channel is used by 54 % of small companies for placing orders and by 26 % for receiving orders; amongst the large companies, the percentages are 68 % and 26%.

Study published by Digiworld (Digiworld 2012) shows differences between regions and in depth discuss, among others, two major areas of e-business namely on-line advertising and e-commerce They report that the bulk of on-line advertising revenue around the globe – estimated at more than 53 billion EUR in 2011 – is divided up between sponsored links and display adds, including



new innovative formats. Growing at an average annual rate of 15,8 % between 2011 and 2015, the global on line advertising market is forecast to stand at 96 billion EUR in 2015. EU27 online advertising market is in 2012 worth 13,9 billion EUR, North America stands in 2012 at 20,6 billion EUR and Asia/Pacific stands in 2012 at 13,7 billion EUR. Digiworld forecast for 2015 is 20,7 billion EUR for EU27, 30,1 billion EUR for North America and 23,4 billion EUR for Asia/Pacific. It is also interesting that Digiworld reports that online advertising market is a very concentrated market in terms of its purveyors. Google singlehandedly accounts for close to half of all online add revenue, or almost 27 billion EUR in 2011. Facebook is still a relatively small player at the market, earning just over 3 billion last year, which is only slightly less than Yahoo.

According to Digiworld Online retail sales continue to enjoy double-digit growth in developed countries: +18% in the US, between 2010 and 2011, +22% that same period i.e. in France. Still, e-commerce only represents small fraction of retail sales: 4,7% at the end of 2011 in US and 4,1% in France in 2010. Online shopping is still very much focused on few products: travel, cultural goods (i.e. digital media), high tech goods, and clothing. Major retail sectors such as groceries and furniture are only just entering e-commerce, and less than 1% of their sales are online. So, according to Digiworld, e-commerce still has tremendous room to grow, and will continue to develop at average annual growth rate of around 9% in Europe and 10% in US from 2011 to 2015. Asia will have even higher rates of progress during that time at 16% annually. As far as industry structure is concerned, Amazon and E-bay have managed to establish and international footprint, and are market leaders across Europe despite the success of a handful of national players. According to Digiworld have Asian countries been more successful in protecting their markets (i.e. Taobao in China and Rakuten in Japan). Amazon is nevertheless by far the world's largest online retailer, with over 34 billion EUR in sales in 2010 and fast growth (+50% in Q2 2011 compared to Q2 2010).

In their recent study Digiworld (Digiworld 2013) reports that e-commerce market is continuing to experience double-digit growth due to several factors. In countries where e-commerce is widely practiced, the trend is for online shoppers to increase their activity, which equates to buying more frequently. Even there is also trend toward smaller basket sizes, strong growth is still being seen in the sector. E-commerce is particularly resistant to the economic downturn, in that allows users to find the lowest prices in a completely transparent manner. Although e-commerce was originally largely domain of higher-income group, there has been increased shift in on-line shopping in recent years in favour of lower-income groups.

In academic research e-commerce and e-shopping have been researched by several authors in several studies. Academic studies use different approaches. Todd and Javernpa (1997) introduced technology-centered view and consumer oriented views for adoption of online shopping. The technology centered view involves the technical specifications of an internet store that influence consumer's awareness using internet technology (Chen et al. 2002).

In traditional shopping marketing theory defined the influencing factors of consumer behavior. In e-shopping classical factors (culture, social, psychological etc. factors) still had influencing role. However, e-shopping features made these factors different. Online transactions between consumer and retailer faced various risks. On line transactions are also connected to privacy questions of using new technology. Consumer cognition is another important factor where e-shopping offers only visual experience (consumer cannot touch the product). Technology awareness and experience also influence e-shopping. The most important issues look to be shopping security and shopping convenience. Internet shopping is reflected in payment, delivery and consumer information. Internet shopping convenience is mainly reflected in shorter time and easier shopping than in real shops.

The researchers seem to take different perspectives and focus on different factors in different ways. Case, Burns and Dick (2001) suggest that internet knowledge, income and education level are especially powerful predictors of internet purchases. Ho and Wu (1999) discover that there are positive relationship between online shopping behavior in five categories of factors, which include e-shop's logistical support, product characteristics, websites technological characteristics, information characteristics and website presentation. Most studies have identified seven influencing factors of internet shopping: website visibility, e-shop credibility, information comparison, payment security and privacy, website interface, convenience, educational level of user and experience with technology.





## RESEARCH STUDY

The aim of research study conducted among users of e-shop web sites was to clarify their attitude toward e-shops and to find out the patterns of e-shopping. The data was collected by survey using e-questionnaire.

The questionnaires were collected in June 2014. The sample was selected randomly where all regions in Slovenia were included. We considered that collecting the data by e-questionnaire will be easier and faster. Through an online survey we collected 171 completed questionnaires. The responsiveness of online survey was 68 %, so there were 81 incomplete questionnaires from a total of 252.

Female respondents accounted the majority of our sample. Among all 171 respondents, there were 114 female, which is 67 % of the respondents. Representatives of the male was 57, so 33 % of the respondents.

We also found out that most respondents were aged from 21 to 40 years old. These were 79 % which means that 135 respondents were in this age. From 41 to 60 years old were 17 respondents, representing 10 % of the total. Then follow respondents aged from 61 years and over, which was 6 % of respondents. The survey also included persons aged up to 20 years, where 8 of them gave their responses. This is 5 % of all surveyed respondents.

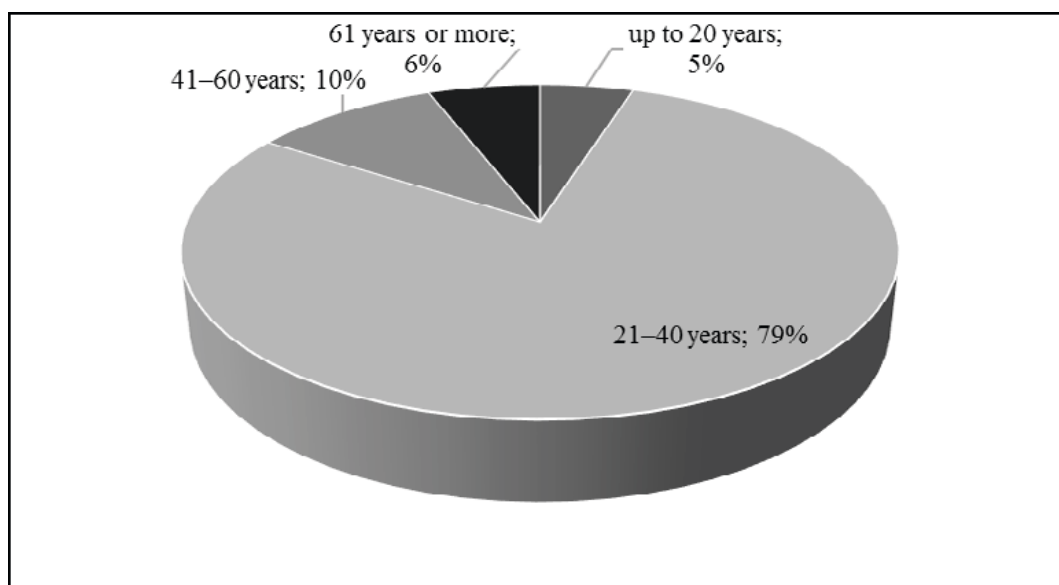


Figure 1: Respondents age

With the demographic data we have also examined the status and we discovered that the most of the respondents were employed - 104 of them, which is 61 % of the total. Then follow secondary students and students in 18 %, which is 31 respondents. Then follow unemployed in 13 %, which is 23 respondents. There was at least retired people - 14 of the respondents or 8 %.

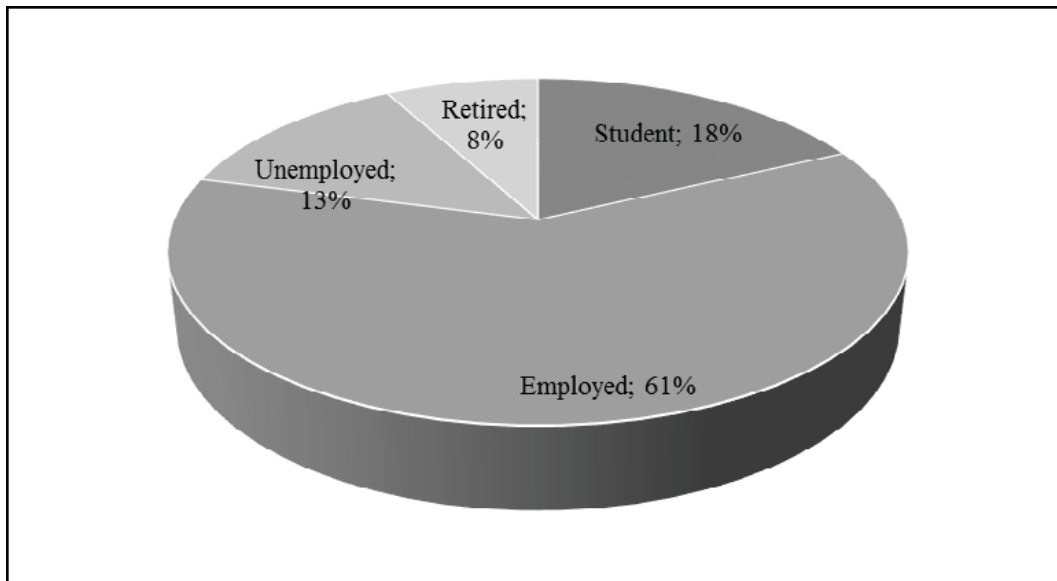


Figure 2: Respondents status

Of all 171 responses, 72 % or 124 respondents use the Internet several times a day, 32 respondents (19 %) use it almost every day, 5 respondents (3 %) answered that they use the Internet at least once a week and 10 respondents (6 %) use the Internet only a few times a week.

Table 1: Frequency of Internet usage (N=171)

Answers	Frequency	Percentage
several times a day	124	72 %
almost every day	32	19 %
at least once a week	5	3 %
several times a month	10	6 %
<b>TOTAL</b>	<b>171</b>	<b>100 %</b>

## RESEARCH FINDINGS

The results show that from 171 only 24 % or 41 respondents have never purchased through e-shop. Other respondents have already purchased through the Internet. 37 % of them buy from e-shops only in Slovenia, 36 % purchased from international e-shops. Only 3 % of the respondents purchased only in international e-shops.

Table 2: Purchasing through e-shops (N=171)

Answers	Frequency	Percentage
YES, only in Slovenia	63	37 %
YES, but not in Slovenia	5	3 %
YES, and also from abroad	62	36 %
NO	41	24 %
<b>TOTAL</b>	<b>171</b>	<b>100 %</b>

Figure 3 shows what information are respondents searching for on the Internet about the product or service when they are making decision about purchasing it. We found that the most frequently information are connected with the characteristics and the location of the shops, if they do not decide to purchase through e-shop. There are 11 % of those respondents who do not search for any information on the Internet before purchasing.



Figure 3: Searched information on the Internet

Figure 4 shows what products or services have respondents already ordered through e-shop. We examined what are users of e-shops ordering, which types of products they usually order through the Internet. The results show that they usually decide to purchase technical products, which is represented by the 17 % of the respondents. Then follow 15 % of those who are buying clothes in e-shops, 13 % of them are ordering different types of tickets, 11 % are buying shoes. Only 2 % of them decide to buy CDs, DVDs as well as food. With this question we gave the possibility to the respondents to add a statement by themselves, about what they are also buying in the e-shops. Here they indicate that they have already bought mattress, different toys, games, things for their children and jewelry.

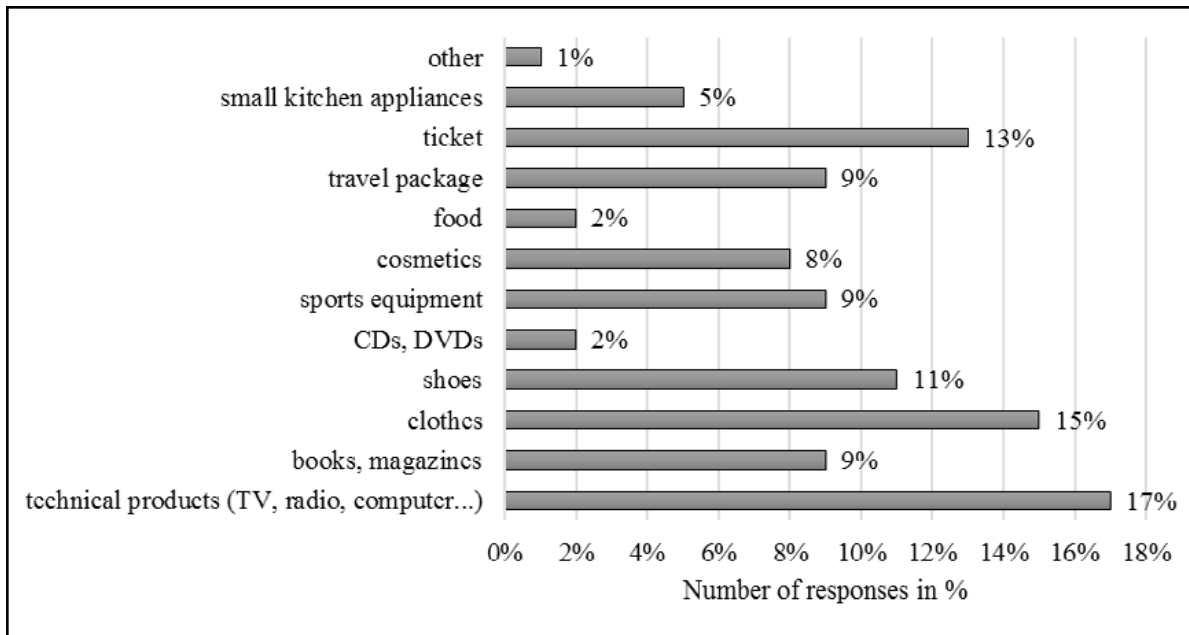


Figure 4: Ordered products or services in e-shops

We also wanted to know what are the factors influencing the decision to purchase in particular e-shop. We found that more than half of the respondents or 51 % of them made their decision on the basis of the price of a product or service. 30 % of them says that for them is also important what information do they gain about the product or service. The last important thing is the appearance of the e-shop, so 7 % of them or only 9 respondents valued the appearance of the e-shop in which they order product or service.

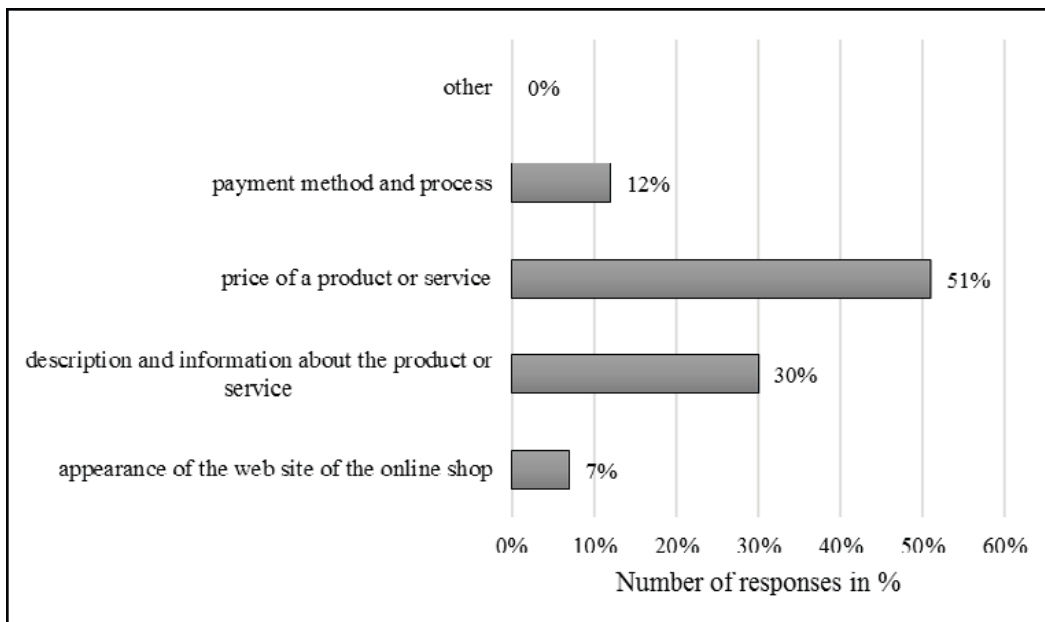


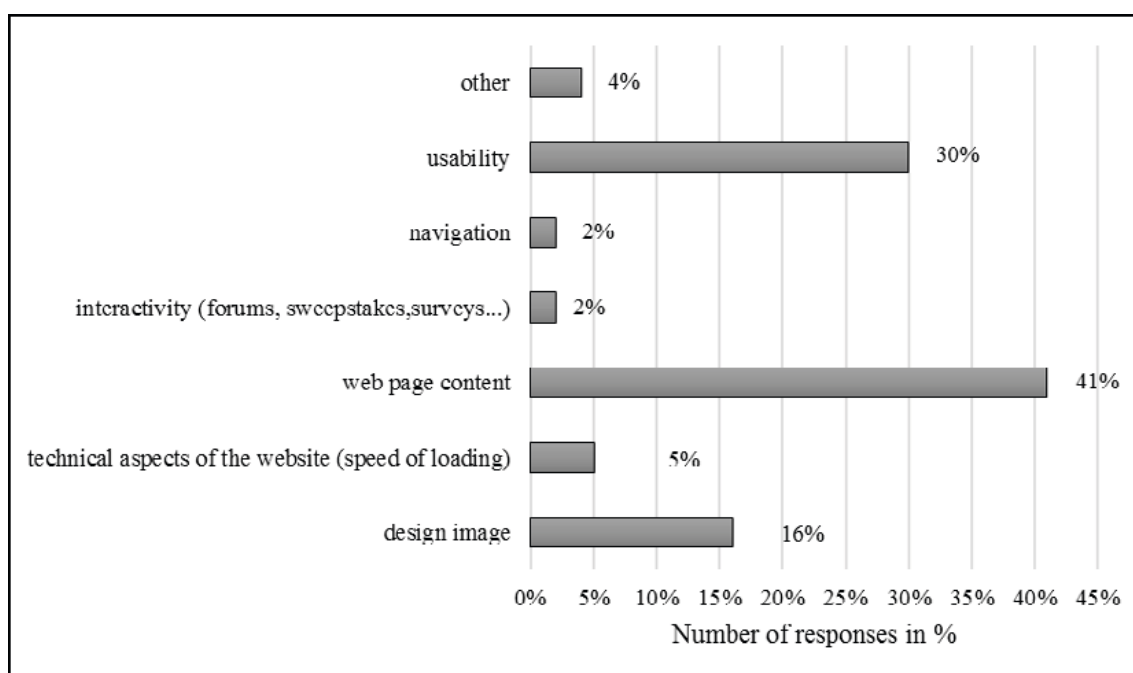
Figure 5: Factors that are important when choosing an online shop

We also examined is the speed of page loading also important for the respondents who use the Internet and e-shops for purchasing products or services. Thus, we find that this is very important for 89 % of the respondents when they shop online. 11 % of them or 14 respondents think that the speed of the page loading is not important issue when purchasing through the Internet.

*Table 3: The importance of website loading speed (N=130)*

Answers	Frequency	Percentage
Yes	116	89 %
No	14	11 %
<b>TOTAL</b>	130	100 %

41 % of the respondents said that they are attracted by the content of the website and then decided to purchase. Then follow the usability by 30 % and design with 16 %. The last thing that attracts them is the interactivity and navigation itself. This response was given by 2 % of the respondents.



*Figure 6: Factors influencing the purchase through the web site of the e-shop*

When answering the question “What contribute to your decision about purchasing a particular product through e-shop?”, the respondents could choose from more different options. 26 % of respondents think that their decision to buy something was influenced by the content and description of the product in the e-shop. Then with 19% follow factors such as picture of the product and the ability to compare different products. It is interesting that only 10% of them think that their decision to buy something was influenced by the payment method of the product. There is only 1 % of those who think that their decision was influenced by the price and the good name of the e-shop.

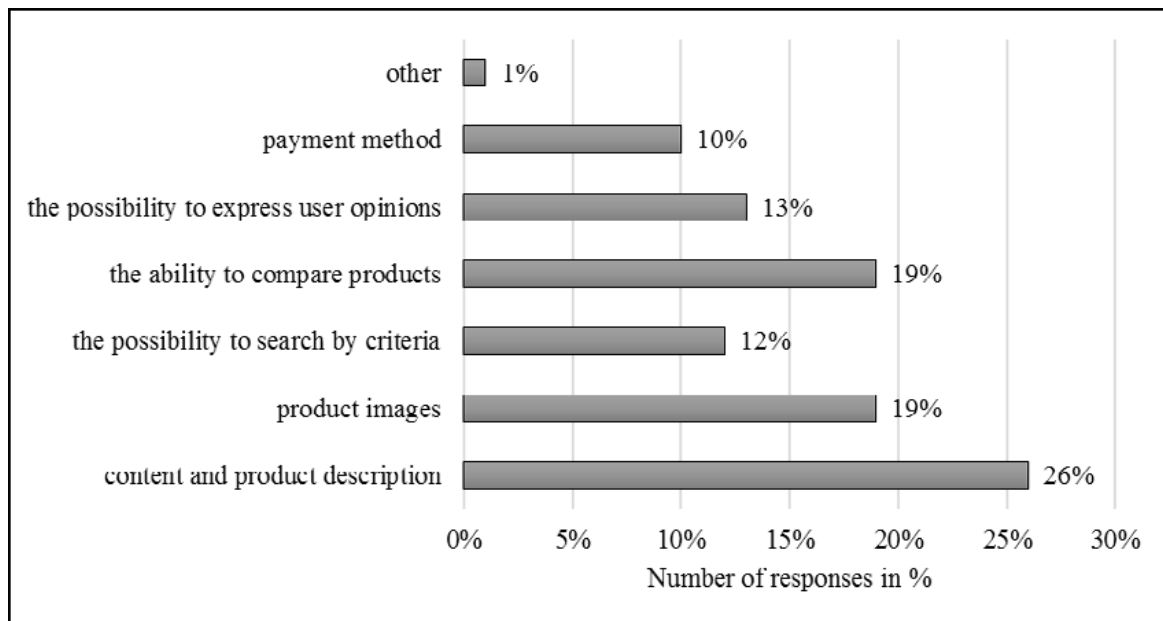


Figure 7: Factors influencing the decision to purchase in particular e-shop

Of all 130 respondents there are 57% of those respondents who spend from 51 EUR to 500 EUR for their e-shopping. Then follow 32% of those who spend up to 50 EUR for their purchase in the last 12 months. The smallest percentage is about those who spend all together in one year more than 1000 EUR for their purchase. There are 5% or only 6 respondents.

Table 4: Value of purchases in the last 12 months (N=130)

Answers	Frequency	Percentage
up to 50 EUR	41	31 %
from 51 EUR to 500 EUR	74	57 %
from 501 EUR to 1000 EUR	9	7 %
more than 1000 EUR	6	5 %
<b>TOTAL</b>	130	100 %

We found out that the majority of respondents or 56 % of them are still paying on delivery. There is 29 % of those who pay their order by credit or debit card. Only few of them make the payment by invoice, slip or by Moneta (with the mobile phone).

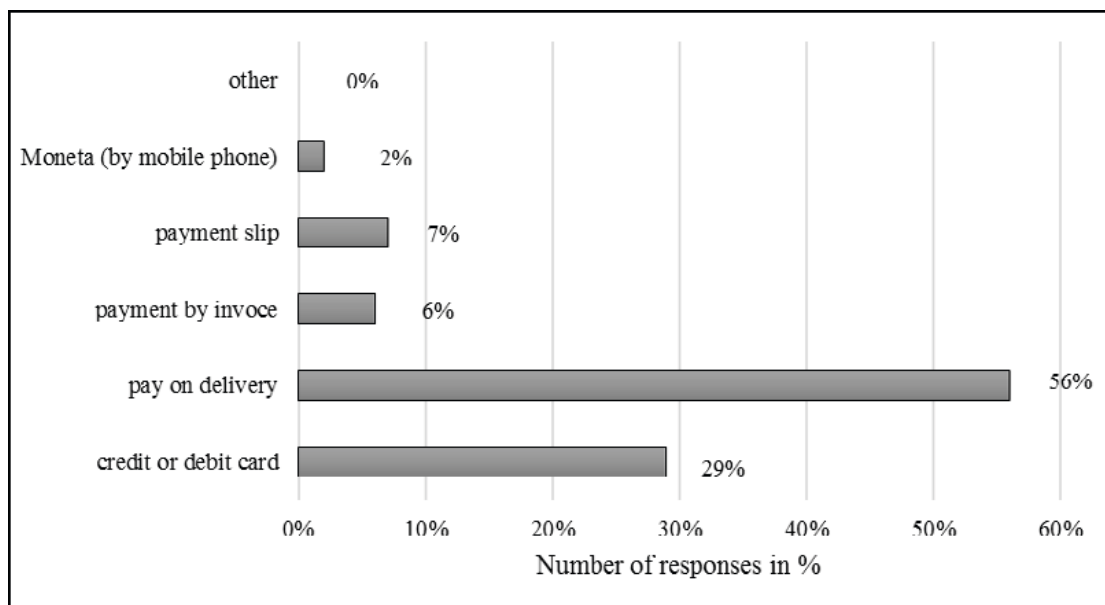


Figure 8: Payment method

Table 5: The results of agreement with the statements (N=130)

Sub-questions	Valid	Average	Std. deviation
By using e-shop I save time.	130	4,4	0,89
There is a wider choice in the e-shop than in the traditional stores.	130	3,9	0,99
I decide to use e-shop because this specified product cannot be bought otherwise.	130	3,6	1,09
When buying in e-shop I have more information than buying in traditional stores.	130	3,6	1,13
By using e-shops I avoid crowds in the traditional stores.	130	4,3	0,98
E-shopping is cheaper than shopping in the traditional stores.	130	3,7	1,06
By using e-shop I save money.	130	3,7	1,06
I decide to use particular e-shop on the basis of the description of the product.	130	3,7	0,95
It bothers me the possibility of misuse of credit cards.	130	3,8	1,29
The process of buying in e-shop it seems to be complicated.	130	2,3	1,25
I decide to use particular e-shop on the basis of website appearance.	130	2,6	1,15

With this question we wanted to determine the level of agreement in relation to the given statements. We used a Likert scale, with a scale from 1 to 5. This question was answered by 130 respondents. In the table we present data with the mean and standard deviation.

The most of the respondents agreed with the statement 1 »By using e-shop I save time«. The arithmetic mean is 4,4, mode is 5, median 4 and standard deviation 0,89. The most of the respondents decided to answer with answer 5 (completely agree), which means that the most of them think that they save time by using e-shops. There is also a high level of agreement with the statement »By using e-shops I avoid crowds in the traditional shops«, where the arithmetic mean is 4,3, median and mode are 5. This means that the most of the respondents answered with 5 (completely agree). So, with this they confirm that they agree with the statement that they use e-shops to avoid crowds in traditional shops.





The greatest disagreement is with the statement »The process of buying in e-shop it seems to be complicated«, where the most of the respondents answered by 1 (strongly disagree) In this statement is the lowest arithmetic mean of 2,3, mode is 1 and median 2. This means that the majority of the respondents who think that the process of e-shopping does not seem complicated. They also expressed their disagreement with the statement »I decide to use particular e-shop on the basis of website appearance«, where the arithmetic mean is 2,6, median and mode 2. This means that the respondents partially disagree with the statement and they do not decide for purchasing on the basis of website appearance, but based on other factors.

On average, the respondents were unable to define themselves about following statements: »I decide to use e-shop because this specified product cannot be bought otherwise«- in this statement the arithmetic mean is 3,6, mode 4 and standard deviation 1,09. In the statement »When buying in e-shop I have more information than buying in traditional shops«, the arithmetic mean is 3,6, mode 4 and standard deviation 1,13.

*Table 6: Reasons for not using e-shops (N=41)*

Answers	Frequency	Percentage
Because the process of buying is too complicated	4	10 %
Because the product cannot be seen in live	17	41 %
Because I have to wait for delivery	0	0 %
Because I do not trust e-shopping	13	32 %
Because it bothers me the possibility of abuse of payment cards	7	17 %
<b>TOTAL</b>	<b>41</b>	<b>100 %</b>

This question was answered only by those who have previously responded that they have never made any purchase in e-shops. These was 41 respondents. We wanted to know what are the reasons for not using e-shops. 41 % of them say that they have never purchased in e-shop because they cannot see the product, 32 % do not have confidence in e-shopping, 17 % of them do not decide to buy because they interfere with the possibility of misuse of credit cards. 10 % of them think that the process is too complicated, so we can assume that the want to use e-shopping but during the process they found it too complex and decided not to order a product in e-shop.

The computer today is used almost everywhere: at home, at work, at school, so there is no place where the computer is not used. Therefore, we wanted to know where our respondents use their computer for browsing on the Internet. The results showed that the most frequent place to use the computer is at home. This answer was given from 83 respondents, who represent 49 %. 62 respondents or 36 % use the computer at home and at work, while 14 % or 24 respondents use the computer only at work. There is only 1 % of those who use it only at school.

*Table 7: Location of computer use (N=171)*

Answers	Frequency	Percentage
at work	24	14 %
at home	83	49 %
at work and at home	62	36 %
at school	2	1 %
Other	0	0 %
<b>TOTAL</b>	<b>171</b>	<b>100 %</b>

## CONCLUSION

The factors connected to internet shopping and studied in our study and other studies indicate that internet shopping is a multidimensional and multidisciplinary phenomenon. Different studies have different ways of operationalizing seemingly the same constructs. It is clear that personal characteristics, vendor/service/product characteristics and website quality significantly affect internet shopping attitudes, intention and behaviour. They can impact also on increased frequency of initial purchase and repeat purchases.

Research confirmed also majority of our hypotheses which we developed on basis of our experiences. We identified positive relationship between internet shopping behaviour in some categories of factors, which include e-shop's payment and product delivery options, product description and price, websites technological characteristics, information characteristics and website presentation. Also very important are e-shop website visibility, e-shop credibility, payment security, website interface, convenience, educational level of user and experience with technology.

Customer expectations while shopping on internet in e-shops are higher and higher. Retailers should see this situation as a challenge and as an opportunity to build competitive advantage. They should ensure a superior online customer experience on their websites from technology viewpoint and from content viewpoint. They should create streamline multichannel experience including traditional e-shops, social network connections and mobile devices interfaces. According to these they should develop compelling and integrated multichannel marketing messages. They should also continuously develop privacy policy. Focus should be on removing uncertainty. They should ensure an integrated and customer focused delivery experience including return policy and procedures. They should refresh online content regularly and they should develop and monitor performance metrics.



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# Enterprise Values and their Influence on an Enterprise Policy

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## *ABSTRACT*

Enterprise governance is resulting in enterprise policy. What kind of enterprise policy enterprise has is influenced also by enterprise values – values of key, decisive enterprise stakeholders. Enterprise values influence its culture and ethics that are in the MER model of integral management classified among key success factors of an enterprise. Therefore we can conclude that also enterprise values influence enterprise's success. Since they influence also enterprise policy, they are worth to be examined.

*Keywords: enterprise values, enterprise policy, strategic management.*

## INTRODUCTION

Belak (Ja., 2010, p. 152) includes in the MER model of integral management ten key success factors, based on research findings. He notes that the key success factors are: the external and internal compliance of the enterprise, enterprise's credibility, competitiveness, entrepreneurship, synergy, culture, philosophy, ethics, ecology, and effectiveness (see Belak, Ja., 2010, pp. 149–178). As we can see, among them author includes also the enterprise's culture and enterprise's ethics. According to Potočan and Mulej (2007) enterprise culture is influenced by enterprise values and influences enterprise ethics. Consequently we can conclude that because enterprise values directly influence enterprise culture and indirectly also enterprise ethics, according to MER model (Belak, Ja., 2010; Belak, Ja. and Duh, 2012; Belak, Ja. et al., 2012) both enterprise key success factors, enterprise values are one of the important enterprise's factors too (see e.g. Štrukelj et al., 2012). Enterprise values and their influence on enterprise policy we are going to research in the continuation. First, we will present some theoretical backgrounds with general values introduction (Chapter 2). Then we will present enterprise values and introduce their importance for the enterprise policy (Chapter 3). In the last chapter (Chapter 4) we will bring our research to an end with some concluding remarks.

## THEORETICAL BACKGROUNDS

In 1961 Kluckhohn and Strodtbeck presented a Values Orientation Theory. They suggested researching limited number of universal society problems that have several possible solutions and that are in different societies different preferred. Their value based solutions reflect researched society's value orientation profiles. Value orientation theory emphasizes (Kluckhohn and Strodtbeck, 1961):

- (1) Time aspect orientation: (a) primarily focused on past – little time urgency, preserving traditional believes, learn and values draw from history; (b) primarily focused on present – time is money, accommodating changes in tradition and believes, one should enjoy today; (c) primarily focused on future – time is money, planning ahead and seeking new ways gives you chance to change and grow in the future;
- (2) Relationship with environment: (a) cultures dominate nature – there is no fait determined destiny; (b) cultures are subordinated to nature – nature and genetics cannot be changed, destiny and fait cannot be changed; (c) cultures live in harmony with nature;
- (3) Relating with each other – best form of social organisation: (a) hierarchically – lineal: a high degree of status differentiation, there are leaders/decision makers and followers; (b) as equals – collateral, everyone in the group shares in a decision process; (c) individualistically – according to their individual merit should people make decisions for their own, in group decision is “one person one vote”;
- (4) Basic human motives on activity orientation: (a) motivation for behaviour is external – “doing” orientation – achieving in life through efforts/reward focus, what you accomplish determines your worth; (b) motivation for behaviour is living for the moment or “Being in becoming” orientation – enjoy life, take emotional basis into consideration and grow in abilities that you value – own inner development; (c) motivation for behaviour is internal – “being” orientation – reduction of desires through material sphere detachment and expression of your being;



- (5) Human nature orientation: (a) good – people are born essentially honest and trustworthy therefore participatory management style is prevailing; (b) bad – people are basically dishonest and untrustworthy and need to be controlled, therefore autocratic management style is prevailing; (c) mixture – people are generally good, but one has to control unusual behaviour situations therefore neither of both extreme management style is prevailing.

The Rokeach Study of Values (Rokeach, 1979) researched personal values<sup>1</sup>. For every person he determined 36 widely, universally held values, e.g. honesty, wisdom, courage etc., which is much more than Hofstede's (1980; 2001; Hofstede and Bond, 1988; Hofstede et al., 2010) six universally held values determination. Similar developed Schwartz (1992) his values theory, based on research, held in 54 different countries. He proposes 10 values that are universally in individuals (and reflect the individual's unique experiences and the normative influence of the culture) and seven values that are universally across cultures (invariant, the guiding principles universally recognised). Smith and Bond (1998) stated that the similar results of Hofstede (1980; 2001) and Schwartz (1992), although researched with different methodological approaches, indicate that universally applicable values theory will be developed soon.

Taking into account these starting points, authors showed that development of universal sets of basic human values is possible (see also e.g. Allport et al., 1931 and onwards; Hofstede, 1980; Hofstede, 2001; Rokeach, 1979; Schwartz, 1992). Because societal values influence enterprise values (House et al., 2004), Kluckhohn and Strodtbeck's (1961) Values Orientation Theory, that is still worldwide used (Russo, 2000), may be a useful tool for the enterprise's values research. We introduce enterprise values in the next chapter (Chapter 3).

## ENTERPRISE VALUES

The future enterprise policy, therefore also resulting management and practice, is under influence of the existing enterprise vision and policy, enterprise strengths, weaknesses, opportunities and threats, and also soft variables, e.g. enterprise values, culture, ethics and norms (VCEN) and the related interests of key stakeholders (cf. Belak, Ja., 2002; Mulej et al., 2010; Štrukelj and Šuligoj, 2014). In this chapter we are researching the enterprise values. Enterprise (stakeholders') values can be used as the frame/criteria for enterprise policy estimation.

In the professional literature we can find different definitions of values and their interdependence with an enterprise; we selected some quotations we find important and introduce them here:

- “Values represent basic convictions what is right, good or desirable, what is important and how important it is. When we rank individual's values in terms of their intensity, we obtain the person's value system. All of us have a hierarchy of values that forms our value system” (see Robbins, Judge, and Campbell, 2010, p. 93).
- According to Lockwood (2009, p. 3) differences in personal values systems interplay with enterprise's ethical decisions, and help to improve transparency, fairness and communication in the enterprise.
- “Employees' performance and satisfaction (Robbins, Judge, and Campbell, 2010, p. 101) are likely to be higher, if their values match well the enterprise values. This argues for management to strive during the selection of new

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<sup>1</sup> Albert Einstein suggested: »Try not to become a man of success, but rather try to become a man of value« (BrainiQuote, 2014).





employees to find job candidates who have not only the ability, experience, and motivation to perform, but also a values system that is compatible with the enterprise's values system".

- According to research by the Chartered Institute of Personnel and Development (CIPD) (Purcell et al., 2004, in Robbins, Judge, and Campbell, 2010, p. 461) "where strongly shared values were demonstrated, people were more likely to be satisfied, display higher levels of enterprise's commitment, have lower quit-rates, and lower levels of dissent or dissatisfaction over levels of pay".
- Enterprise values and the values of the enterprise stakeholders are according to the MER model crucial factors of the enterprise policy. Values of the key (decisive) stakeholders define the "reach" of this enterprise policy (Belak, Ja., 2002, p. 115). The key values (of decisive) enterprise stakeholders influence their social responsibility with defining of the "reach" of enterprise policy (compare Kock et al., 2012; Štrukelj and Šuligoj, 2014).

Lencioni (2002, p. 114–115) developed the following different types of enterprise values: (1) core values are the principles, deeply ingrained, that guide an enterprise development, management and praxis; they also influence the enterprise's culture; (2) aspirational values are values that are currently lacking and should be stimulating and stimulated; (3) permission-to-play values reflect the minimum standards required of any employee (behavioural and social values); (4) accidental values usually reflect the interests of employees and arise spontaneously; for an enterprise they can be good (create an atmosphere of inclusivity) or negative (foreclosing new opportunities). According to this author only core values that should be aggressively authentic and often reflect the values of enterprise's founders are the most important ones and should be stimulating and stimulated. In the MER model enterprise's (core) values are researched according to Ulrich's (1990) methodology.

Ulrich (1990, p. 53 in Belak, Ja., 2002, p. 116) proposes to analyse the following factors: profits for dividends, profits for new investing, risk relation, selling growth, quality of selling products/services, geographical extension, ownership relation, innovation directions, relation to government, social goals consideration, co-workers goals consideration, and management (leadership) style. Among them enterprises should develop their (core) values and personalise them, to make them authentic. They should be socially responsibly oriented (Carroll, 1979; Carroll and Buchholtz, 2006; Berger et al., 2007; Dankova et al., 2015; EU, 2001; 2011; ISO, 2010; Mulej, ed., 2013; 2014; Mulej and Dyck, ed., 2014; Šrotar Žižek and Mulej, 2013). This requires innovative behaviour diffusion that can be spread through social responsibility (Ženko and Mulej, 2011; Ženko et al., 2013a; 2013b) or in other words: socially responsible values can help enterprises to develop their innovation, due to their openness to collaboration.

That enterprise's values influence enterprise's culture most widely recognized showed the belief-value-cultural research of Hofstede made already back in 1980. Author researched IBM enterprise's culture, based on beliefs and values (as well as on geographical location) of 117.000 employees (in 72 countries). He first determined four universally held human values and later added fifth dimension (Hofstede and Bond, 1988) and sixth dimension (Hofstede et al., 2010):

- (1) Power distance (Hofstede, 1980) (power distance perceiving of society or enterprise's employee: low power distance culture – democratic and equal relations; high power distance culture – power is based on the position of the person in the organisational structure);
- (2) Uncertainty avoidance (Hofstede, 1980) (high uncertainty avoidance cultures or enterprises – to avoid ambiguous situations, people rely on laws, rules and formal regulations; low uncertainty avoidance or pragmatic cultures or enterprises – ambiguous situations are comfortable);
- (3) Individualism/collectivism (Hofstede, 1980) (individualistic cultures or enterprises – individual achievements and rights are emphasized; collective cultures or enterprises – individuals are members of larger groups);
- (4) Masculinity/femininity (Hofstede, 1980; Hofstede 1998) (masculine cultures or enterprises values e.g. materialism and power (quantity of life); femininity cultures or enterprises values e.g. relationships and quality of life);



- (5) Short term/long term orientation (initially called the Confucius connection) (Hofstede and Bond, 1988) (society's time horizon: long-term orientation – future is the value; short-term orientation – past and present are values) and
- (6) Indulgence versus restraint (basis: the World value survey data (Minkov, 2007); high level of indulgence – more hedonistic behaviour is allowed; high level of restraint – needs and desires should be in accordance with the social norms).

Based on Hofstede's early research House in 1991 conceived and in 1994–1997 with his team collected data for a GLOBE research (Global Leadership and Organizational Behavior Effectiveness Research), in 62 of the world's countries (see Chhokar et al., 2008; House et al., 1999; House et al., 2004). They identified that enterprise's values (and practices) help to distinguish enterprise's culture, which reflect societal values and culture.

## CONCLUDING REMARKS

Values are internalized criteria for evaluation of what is good or what is wrong (Potočan and Mulej, 2007). Therefore values may be used for judging the correctness of humans' own behaviour, which can be socially responsible or not. Personal values are transferred to the enterprise's values, culture, ethics and norms (VCEN) (and vice versa) and therefore influence enterprises' development and performance (compare Duh et al., 2010). According to Belak, Je. (2013, p. 531) enterprise's values influence not only enterprise's vision and enterprise's policy but are also decisive for enterprise ethics implementation. This is why we intend researching this theory content closely in the near future (see e.g. also Belak, Je. et al., 2010; Brown et al., 2005; Hauptman and Belak, Je., 2014; Kanungo, 2001). (Enterprise) values influence also the (enterprise) culture (Potočan and Mulej, 2007), and this is why we will research also enterprise culture in the near future (see e.g. also Belak, Je. and Milfelner, 2012).



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# ERP Solutions for Enterprises Competitiveness With Innovativeness Towards Social Responsibility and Well-Being Achieving

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## *ABSTRACT*

Small and medium-sized enterprises contribute significantly to the achievement of competitiveness of the national economies. In EU, they represent 99% of all enterprises. For this reason the EU encourages entrepreneurship and innovation of these enterprises in various ways. Innovativeness can and must be stimulated through enterprise governance innovation that should be nowadays social responsible oriented, in order to achieve sustainable competitive advantages. This is easier to attain with the use of selected enterprise resource planning (ERP) solution. To achieve these also country economic policy makers have an important role to play.

*Keywords: ERP, small and medium-sized enterprises, competitiveness, innovation, social responsibility, EU.*



## THE SELECTED PROBLEM AND VIEWPOINT

In this paper we research innovativeness of small and medium-sized enterprises (SMEs), and hypotheses that they are one of the prerequisites for achieving country/economy competitive advantages. We believe that a great benefit for humankind must be oriented toward innovations, responsible behaviour and sustainable future, to achieving well-being of all Earth residents. Innovations should be provided through requisite holism and greater enterprise's responsible behaviour. This need has to be included into the enterprise vision, enterprise policy, its management and praxis and should be promoted by economic policy makers. Therefore, we first examine the SMEs and their impact on country competitiveness achieving (Chapter 2). We explain why (small and medium sized) enterprise vision, governance, management and praxis innovation towards better competitiveness is needed in Chapter 3.

In Chapter 4 we discuss about ERP solutions in SMEs and why they are beneficial in SMEs. Next, we examine economic policy makers' influence on country competitiveness achieving and suggest recommendations for economic policy makers, focusing on SMEs (Chapter 5). We indicate the importance of country and enterprise (policy) development/innovation in the field of study. In the recommendations for economic policy makers we derive from global cognitions and add own knowledge/experiences supplementation. We enrich our research by presenting examples of good practice in SMEs policies of selected countries that can serve as a model for the SMEs policy development in the area under consideration and thus help enterprises and consequently countries to better (global) business competitiveness. We add some final conclusions in Chapter 6.

## COUNTRY COMPETITIVENESS ACHIEVING THROUGH SMES COMPETITIVENESS

In the European Union (EU) there are more than 20 million SMEs that represent 99% of businesses (SMEs, 2014), and are a key driver for economic growth, innovation, employment and social integration. Among enterprises in the EU non-financial business economy (European Commission, 2010, p. 48), about 99.8% are SMEs (i.e., having less than 250 employed persons). Within the SME-sector, the vast majority (92%) are micro enterprises, having less than 10 employed persons. The typical EU business is increasingly a micro business. In 2012 (European Commission, 2013, p. 10) EU micro enterprises employed approximately 86.8 million people. This represents 66.5% (just under a third) of all European jobs (total employment figure) for that year. The SME sector as a whole delivered 57.6% of the gross value added generated by the private, non-financial economy in Europe during 2012. The European Commission (EC) therefore aims to continue to promote successful entrepreneurship and improve the business environment for SMEs (SMEs, 2014), to allow them to realise their full potential in today's global economy. Thus EU helps SMEs (their countries and EU as well) to be more competitive as follows (ibid):

- EC works on broad policy issues affecting entrepreneurship and SMEs, and assists SMEs through networks and business support measures. It helps existing and potential entrepreneurs to grow their businesses, giving special attention to women entrepreneurs, crafts and social economy enterprises.
- The Small Business Act for Europe (SBA) embodies the EU's commitment to SMEs and entrepreneurship. Member States have committed to implementing the SBA alongside the European Commission in an effort to make the EU a better place to do business.





- Since SMEs have to be supported at local level, the EC helps Member States and the regions to develop policies aimed at promoting entrepreneurship, assisting SMEs at all stages of development, and helping them to access global markets. The identification and exchange of good practices are key elements of this policy.
- The European Small Business Portal gathers together all the SME-related information provided by the EU, ranging from practical advice to policy issues, from local contact points to networking links.

Also an increasing body of literature indicates (European Commission, 2010, p. 8) that SMEs are of major importance for macro-economic growth. Consequently, we can conclude, that business competitiveness of any country can be observed throughout her (SMEs) enterprises, and them may be ascribed the greatest impact over the global social and economic situation including the issue of challenges of the enlarged EU. We argue that their type of impact depends on their enterprise policy and strategic management and their requisite holism. Mulej/Kajzer law of requisite holism (1998) reminds people of their need to reach beyond a single viewpoint toward including all essential viewpoints, their interdependences, interactions and synergies, i.e. their dialectical system (See: Mulej et al., 2013), although they have no real chance to attain total holism. Thus enterprises' governance and strategic management must include request over enterprise innovativeness (Chapter 3) that may well support the requisite holism (Štrukelj et al., 2012; Štrukelj & Šuligoj, 2014) and help EU pave their way to their sustainable, competitive future, thus well-being achieving (Šarotar Žižek & Mulej, 2013). This depends on a large scale also on ERP solutions in SMEs (Chapter 4) and (SMEs) innovation concern economic policy development (Chapter 5).

## ENTERPRISE GOVERNANCE FOR ITS INNOVATIVENESS STIMULATING

The competition nowadays is greater than ever (Štrukelj & Šuligoj, 2014), therefore enterprises must develop new resources that result from products/services, processes, and social innovations. To make these possible, enterprises must innovate their enterprise policy/governance (towards more SR). EU (2011, p. 15) calls on the leading European business people to commit themselves to responsible business behaviour (because SR includes humans' responsibility for the consequences of their actions to people and nature – to society). Introduction of SR is also extremely important for achieving enterprise's sustainable competitive advantages (McWilliams & Siegel, 2011). It brings benefits and trust, and stimulates growth and development of the enterprise (EU 2011, p. 3). Enterprises can use SR standards to apply more responsible enterprise policy/governance and practice, because SR helps humans and enterprises to avoid un-holistic actions, resulting problems, and consequences and as a contemporary informal systemic behaviour helps influential persons and their enterprises to practice requisite holism (Mulej et al., 2013). According to MER model (See: Belak, Ja. & Duh, 2012) every organization (also enterprise) defines its basic, general and long-term characteristics in its enterprise policy (mission, purpose, basics goals). A sustainable approach to enterprise policy/governance can lead to the responsible enterprise policy, resulting in desired management, basic-realisation process, products, and services, therefore to the well-being of the enterprises' stakeholders. To achieve these also ERP solutions and economic policy makers can contribute (Chapter 4 and Chapter 5).

## ERP SOLUTIONS IN SMES

At enterprise level, information and communication technology (ICT) and its applications can make communication within the enterprise faster and make the management of the enterprise's resources more efficient (OECD, 2004). Seamless transfer of information through shared electronic files and networked computers increases the efficiency of business processes such as documentation, data processing and other back-office functions (e.g. organising incoming orders and preparing invoices). Increasingly sophisticated ICT applications such as Enterprise Resource Planning (ERP) solutions allow enterprises to store, share and use their acquired knowledge and know-how. ERP solutions attempt to integrate all departments and functions across an enterprise onto a single computer system that can serve all those different departments' particular needs (Wailgum, 2007). It's a single unified software program divided into software modules that roughly approximate the old standalone systems. It's a backbone for internal process integration with Supply chain integration and is the most advanced approach which medium-sized and larger enterprises in the sector prefer in order to manage their operations (e-Business Watch 2008).

OECD analysis shows that the impacts of ICTs on enterprise performance are overall positive (OECD, 2004). The OECD's Electronic Commerce Business Impacts Project (EBIP) studied a set of 217 early successful adopters of e-business strategies in a range of established sectors in eleven different countries. This study showed the positive impacts of e-commerce on their turnover and profitability and to a lesser extent on employment, most notably when e-commerce is part of larger business strategies of enterprises (OECD, 2002). Further work by researchers in 13 OECD countries based on large scale statistical surveys provides evidence that the use of ICT can contribute to improved enterprise performance, in terms of increased market share, expanded product range, customised products and better response to client demand (OECD, 2004). Moreover, it indicates that ICT may help reduce inefficiency in the use of capital and labour, e.g. by reducing inventories, and that the more customers or enterprises are connected to the network, the greater the benefits (spill-over effects). ICT implications are ambivalent for small and medium-sized enterprises:

- On the one hand, large enterprises can gain a disproportionate advantage from e-business by exploiting economies of scale. Their operations have critical mass to make use of advanced ICT systems. The 2007 survey confirms a linear increase according to enterprise size for the diffusion of ICT systems for internal and external process integration such as ERP solutions (e-Business Survey, 2007). Many smaller enterprises, by contrast, still struggle with the requirements of getting digitally connected with their suppliers and customers. If they cannot cope with the requirements of the digital economy, however, they risk being eliminated from the value systems that tend to be orchestrated by large enterprises.
- On the other hand, smaller enterprises do not necessarily need the same powerful solutions as large enterprises in order to achieve the same benefits, because their organisational structure is less complex. Many case studies demonstrate that SMEs successfully use ERP solutions, whether in response to customer requirements or proactively to stay competitive and to support growth strategies (E-Business Watch, 2008).

The use of ERP systems is common (if not a "must have") among large enterprises in most manufacturing sectors; typically, more than 70% of large manufacturing enterprises have an ERP system (e-Business Watch, 2008). The deployment of ERP systems has significantly increased in the past few years among all sizes of enterprises. For the chemical industry for example, the Sectorial e-Business Watch finds that ERP adoption has almost doubled among small enterprises from 2003 to 2007 and increased by about 20 percentage points in medium-sized and large enterprises (ibid.).

In addition, ERP systems can play an important role in supporting connectivity between enterprises; however, the extent to which enterprises link their internal system with those of suppliers or customers differs. In any case, the implementation of an ERP system is a complex venture and a critical milestone for any enterprise. It inevitably requires a critical review of existing business



processes and the introduction of necessary changes. The main gap in ERP adoption is between small enterprises on the one hand and the medium-sized and large enterprises on the other (E-Business Watch, 2008).

## ECONOMIC POLICY MAKERS AND THEIR INFLUENCE ON COUNTRY COMPETITIVENESS ACHIEVING

In the recommendations for economic policy makers we derive from global cognitions. Monitoring innovation governance in the EU Member States over the past years has shown a few important lessons along these lines (See Tsipouri, 2009, p. 10): 1. Innovation governance is path-dependent (as a consequence, changes are slow and evolutionary) [therefore we must stimulate (SMEs) enterprises policy innovation (See: Dankova et al., 2014; Štrukelj & Šuligoj, 2014)]. 2. There is not a single best practice model of innovation governance [still it is important to innovate it in sustainable way, e.g. using ISO 26000 standard on SR]. 3. Top performance is not a coincidence (the most competitive Member States respect good governance and this leads to effective policies enabling the business sector to thrive). 4. After successful efforts to adopt the right rhetoric and set appropriate formal mechanisms, looking into individual elements (details) of implementation may reveal additional issues to focus upon [we can conclude that it is the invention-innovation-diffusion process (IIDP) (See: Mulej et al., 2013) needed].

According to OECD (2010, pp. 2–3) innovation can help accelerate the recovery and put countries back on a path to sustainable – and greener – growth. Innovation policies are therefore of crucial importance for emerging from the still current crisis even in countries with limited scope for public investment. OECD five policy principles for innovation recommendations are (ibid, p. 3): 1. Empowering people [all enterprises' stakeholder] for innovate. 2. Unleashing innovations [toward social responsibility (Dankova et al., 2014) and human well-being (Šarotar Žižek & Mulej, 2013)]. 3. Creating and applying knowledge. 4. Applying innovation to address global and social challenges [toward social responsibility and sustainability (Ženko et al., 2013a)]. 5. Improving the governance and measurement of policies for innovation [especially SMEs innovations]. OECD measurement agenda for innovation (key actions) incorporates following pieces of advice (OECD, 2010, p. 25): 1. Improve the measurement of broader innovation and its link to macroeconomic performance [specifically direct observation to determine the influence of SMEs; we recommend also measures and measurements on SR (Ženko et al., 2013a)]. 2. Invest in a high quality and comprehensive data infrastructure [pay attention on applied enterprise resource planning (ERP) system (Sternad et al., 2011)] to measure the determinants and impacts of innovation. 3. Recognise the role of innovation in the public sector and promote its measurement. 4. Promote the design of new statistical methods and interdisciplinary approaches to data collection. 5. Promote the measurement of innovation for social goals and of social impacts of innovation [which may be a basis for enterprise's systemic action (Ženko et al., 2013); we recommend promoting the measurement of innovation for social goals and of social impacts of innovation through enterprise policy/governance innovation toward social responsibility standards (See: Dankova et al., 2014)]. Policy actions (OECD, 2010, p. 26) also need to reflect the changing nature of innovation. This implies an emphasis on the following areas: 1. A more strategic focus on the role of policies for innovation in delivering stronger, cleaner and fairer growth [especially for SMEs]. 2. Broadening policies to foster innovation beyond science and technology in recognition of the fact that innovation involves a wide range of investments in intangible assets and actors [e.g. enterprise vision and policy/governance innovation (Dankova et al., 2014; Štrukelj et al., 2012; Štrukelj & Šuligoj, 2014)]. 3. Education and training policies adapted to the needs of society today to empower people throughout society to be creative, engage in innovation, and benefit from its outcomes [See: Mulej et al., 2013]. 4. Greater policy attention to the creation and growth of new enterprises and their role in creating breakthrough innovations and new jobs [See e.g.

SMEs, 2014]. 5. Improved mechanisms to foster the diffusion and application of knowledge through well-functioning networks and markets [about invention-innovation-diffusion process (IIDP) see Mulej et al., 2013]. 6. New approaches and governance mechanisms for international cooperation in science and technology to help address global challenges and share costs and risks. 7. Frameworks for measuring the broader, more networked concept of innovation and its impacts to guide policy making [See: Dankova et al., 2014; Mulej et al., 2013; Ženko et al., 2013].

We will continue our research with description of a good practice in SME innovation policies that tries to increase national competitiveness through stimulating innovativeness. All EU countries have been trying to strengthen their (and EU) competitiveness through many national policies that stimulate enterprises innovativeness. In the continuation we present some of the policy instruments that illustrate the efforts of the national governments to support SMEs and can be upon our opinion an example of good policy development practices (Table 1). All researched indicates that economy and enterprise governance, management, and praxis affect its (global) competitiveness.

*Table 1: Good practice examples in SME country innovation policies<sup>1</sup>*

<p><b>Austria:</b> (1) “SME – package” – special support for SMEs working with an external research partner. (2) Programme “Forschungskompetenzen für die Wirtschaft” of the Ministry of Economics, which extends financial support for the research and innovation personnel of Austrian enterprises. (3) The Austrian government also tries to stimulate innovation with public procurement by demanding more innovative products and services. (4) Online national, European and international patent registration.</p>
<p><b>France:</b> (1) Research Tax credits reduce the taxable income of SMEs by 30% of the annual increase in R&amp;D expenditures. (2) Possibility for scientists to work 20% of their time on development of their business while their salaries are paid by the public laboratory (CNRS) that employs them. It is a form of a loan that the new enterprise has to reimburse subsequently. (3) The Laboratoire Paris Region Innovation encourages the government to buy services from innovative SMEs.</p>
<p><b>Germany:</b> (1) Leading edge cluster competition supporting SMEs via networking and public funding for joined R&amp;D (if matched with private funding), typically over 5 years.</p>
<p><b>Luxembourg:</b> (1) R&amp;D support schemes for young innovative enterprises (matching fund scheme introduced by the Ministry of Economy), under which a subsidy of EUR 1m is provided to SMEs for the development of the enterprise, including commercialisation and internationalisation activities. It also has a positive impact on BA [Business Analyst] activity (reduced risk). (2) Support for entrepreneurs through the Business Mentoring programme (experienced entrepreneurs provide mentoring to less experienced business owners). (3) Creation of Technoport S.A., incorporating two public incubation structures (Ecostart Innovation Center and Technoport Schlossgarten) to provide the best possible support services to young innovative start-ups. (4) The Luxembourgish government has set an interval of 2.3 – 2.6% of GDP as target for R&amp;D investments, under the Europe 2020 strategy.</p>
<p><b>Malta:</b> (1) The privately funded ICT Gozo Malta Cluster brings together local and internationally sourced ICT [information and communication technology] breakthroughs and experts to work on projects that match European and international high priorities, in cutting edge ICT domains such as Future Internet, Global Cyber Security and Secure Computing in the Cloud.</p>
<p><b>Netherlands:</b> (1) Identification of 9 sectors as main domains facilitates pooling of resources and boosts collaboration between universities, SMEs and large enterprises. This stimulates innovation and growth in these sectors. (2) Good technological infrastructure for SMEs facilitating better communication between SMEs and the government and between SMEs themselves. (3) Innovation projects funded by the government resulting in accelerated growth of SMEs including the innovation. Officer Scheme (public grants enabling SMEs to hire an Innovation Officer, an employee whose main responsibility is to enhance innovation).</p>

Source: SME performance review, 2013, pp. 81–82.

<sup>1</sup> We introduce the field »Skills and Innovation«, in SBA (Small Business Act).



## SOME CONCLUDING REMARKS

We can conclude that although the selected policy instruments that illustrate the efforts of the national governments to support SMEs can be example for good policy development path, it is important to place stress on the needfulness of all enterprises (governance, management, and other stakeholder) conscious that (SMEs) enterprises need to innovate their enterprise policy (Dankova et al., 2014; Štrukelj and Šuligoj, 2014), consequently also strategic management, and basic-realisation process, to turn governance policy instruments into their advantage and thus better (global) business competitiveness. Responsible enterprise policy presents important management instrument influencing development and operation of that enterprise, enabling the sustainable development for the current and coming generations and our well-being achievement. Although SME country innovation policies encourage research and development and innovativeness, we recommend including also the encouraging of SR (like e.g. EU, 2011). This is an aspect which we have realized that it is necessary to include.





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# Problems of Public Finance in Russia: Regional Aspect

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## *ABSTRACT*

Among the problems associated with the development of public finance in the Russian Federation an important place is occupied by the issues of a regional nature. In the conditions of sufficiently wide budget authorities granted to the constituent territories of the Russian Federation, there are significant regional differences in the level of budget autonomy, in the effectiveness of the system of inter-budget transfers and in the nature of the problems concerning financial cooperation with federal authorities. In this regard current challenges and shortcomings in the functioning of public finance in Russia at the regional level and ways of corresponding overcoming are presented in this article.

## INTRODUCTION

During 1994-2014 in the Russian Federation was implemented complex of reforms in the field of public finance. At the same time in the sphere of public finance there are still a number of unresolved issues, including the regional level. In the conditions of sufficiently wide budget authorities granted to the constituent territories of the Russian Federation, there are significant regional differences in the level of budget autonomy, in the effectiveness of the system of inter-budget transfers and in the nature of the problems concerning financial cooperation with federal authorities.

Under these conditions, the deepening of scientific knowledge in the field of the functioning of public finance in Russia at the regional level are represented as actual tasks.

The subject of research – budgetary relations arising between federal and regional levels of law authorities in the R.F. in conditions of realization of reform of public finances.

Theoretical basis of research were made by Russian and foreign economic scientists. The works of A.G. Igudin, G.B. Polyak, V.B. Shuba are devoted to the questions of budgetary relations. Despite the availability of a wide cycle of works, it should be noted that it seems not enough full disclosure of problems and shortcomings in the functioning of public finances in Russia at the regional level and ways to overcome them.

Information base of research: legislative and regulatory legal acts of the Russian Federation, the subjects of the Russian Federation governing the organization of budgetary relations, statistics and analytical materials of the Ministry of Finance of the Russian Federation.

The aim of research is to identify and study the problems and shortcomings in the functioning of public finance in Russia at the regional level and ways of corresponding overcoming are presented in this article.

In accordance with the purpose of the study, the following tasks are:

- to consider the content of fiscal federalism;
- to analyze imbalance between the volume and nature of the powers delegated to regional authorities and the means at their disposal;
- to analyze imperfection of the system of inter-budget transfers provided to the regional budgets from the federal budget from the point of view of the structure, allocation methodology and its outcomes;
- to analyze the level of budget autonomy of the constituent territories of the Russian Federation
- to suggest the ways to improve the efficiency of public finance at the regional level of government.

To achieve the objectives were used: economic and applied statistical methods, the method of comparative analysis, the method of expert evaluations



## MAIN PART

The beginning of budget reforms in Russia was associated with the adoption of the Budget Code of the Russian Federation in 1998. According to the Budget Code of the Russian Federation set of the federal budget, regional budgets, local budgets and budgets of state extra-budgetary funds, based on economic relations and the political system of the Russian Federation, regulated by legislation of the Russian Federation, is a budget system of the Russian Federation [1].

Thus, the budgets of the subjects of the Russian Federation (regional budgets) are part of the budgetary system of the Russian Federation.

Many Russian and foreign studies have shown that the basis for any change in the public sector is economically justified separation of powers and the sources of their funding between the federal, regional and local levels of government. Solving these problems is based on a study of the foundations of fiscal federalism.

In the Russian legislation there is no legal act, giving a clear definition of fiscal federalism. Proposal for consolidation of this term in the Budget Code of the Russian Federation was rejected. However, this did not affect the scientific and practical interest to the problem of the formation and development of fiscal federalism in Russia. In 2001, the RF Government approved the "Program of fiscal federalism in Russia up to 2005". Although the document also does not give a definition of fiscal federalism, from the content indicated that under fiscal federalism is meant "a budgetary system, allowing regional authorities to conduct an independent fiscal policy within the statutory budgetary authority" [2].

Scientists studying the problems of fiscal federalism, have different views on the content of this category.

In the dictionary of Institute of Economics «Federalism» is defined as follows: "fiscal federalism - a multi-level system of the state budget, in which each of the levels of government has its own budget and shall operate within the powers assigned to him." [3].

A.G. Igudin defines fiscal federalism as a relationship based on a combination of the principles of centralism and decentralism between federal and regional authorities [4].

G.B. Polyak in their work identifies fiscal federalism as "separation of powers between the central authorities, the authorities of the subjects of the Russian Federation, local authorities in the field of finance." [5].

According to V.B. Shuba - fiscal federalism can be defined as the formation of fundamental concept of the relationship between the budgets of different levels [3].

In view of the above, can be isolated following basic approaches to the interpretation of fiscal federalism:

- Fiscal federalism as the relationship between the authorities;
- Fiscal federalism as the form of the budgetary system;
- Fiscal federalism as the separation of powers between the different levels of government;
- Fiscal federalism as a concept of forming a system of budgetary relations.

Definitely there are different approaches to the definition of fiscal federalism. It is a consequence of the complex nature of this category. Without denying the scientific interest, which represents each of the interpretations of fiscal federalism, we note that many of the nominated definitions is not uncontroversial.



We share the position of scientists considering fiscal federalism as the form of the budgetary system in a federal state and offer the following definition. Fiscal federalism - the form of the budgetary system of the state and a set of principles for the organization of fiscal relations arising between different levels of government on the questions of division of powers and financial provision of their execution. This should create the conditions for quality performance of regional and local authorities of their tasks and functions.

For the period of 1991-2014 the relationships between the federal and regional levels of authority in Russia have undergone significant changes, which, in our opinion, were not always consistent and logically linked with the overall strategy of development of the state financial system.

Without denying the significant results achieved in the sphere of optimization of the financial mechanism in interaction between public law entities, we note that wide range of problems currently remains unresolved. These problems are the following:

- imbalance between the volume and nature of the powers delegated to regional authorities and the means at their disposal;
- imperfection of the system of inter-budget transfers provided to the regional budgets from the federal budget from the point of view of the structure, allocation methodology and its outcomes;
- low level of budget autonomy of the constituent territories of the Russian Federation which is manifested in the high level of their budgets' dependence on inter-budget transfers from the federal budget and the limited rights under the disposal of provided means.

Let us reveal the contents of these problems.

With 2012 in the Russian Federation the work on reforming the system of demarcation of powers between the authorities of the federal and regional level is currently being implemented. Transformation logic is all about to maintain the federal government's authority under the general legal and methodological regulation for the priority areas of socio-economic development and the expansion of the rights and duties for the constituent territories of the Russian Federation on performing the organizational and direct public services. The transfer of powers on the level of the constituent territories of the Russian Federation is implemented not only at federal but also at the municipal level. Thus, organization of medical care powers with the transfer to the regional property municipal institutions of education and health are assigned to the regional authorities. These measures illustrate the process of powers concentration at the level of the constituent territory of the Russian Federation.

In our opinion, it is difficult to give an unambiguous assessment of such transformations. If the powers' transfer that were previously included in the scope of RF jurisdiction to the constituent territories of the Russian Federation can be explained by the classical principles of devolution, the process of assigning to the constituent territory of the Russian Federation the powers formerly owned by local governments appeared to be more difficult problem.

One of the reasons that caused previously assigned to the local authorities powers' transfer to the constituent territories of the Russian Federation was the lack of resources of local budgets for their quality and complete fulfillment. The problem is complicated by the high degree of differentiation of municipalities on financial possibilities of carrying out their functions and tasks. These circumstances determine significant amount of regional budgets for the provision of inter-budget transfers to municipalities. Financial flows that arise in this process result in additional time spent on administration moments. The result is a circulation of financial resources between budget of the constituent territory of the Russian Federation and local budgets. This circulation prevents the effective disposal of assets and qualitative execution of the powers delegated to local authorities.

All these arguments confirm the feasibility of the powers' concentration in the organization of providing public goods at the level of the constituent territory of the Russian Federation and reducing the number of tasks assigned to local authorities.



The contradiction between the principles of subsidiarity, external effects and scale effect is described in the theory of budget federalism. In conditions of high level territorial development differentiation inherent to the RF, the positive impact of decentralization offset by the impact of a wide range of factors. Thus the refusal to give local authorities the broad powers in the provision of public services seems to be justified.

An important task in the further demarcation of powers between state authorities of the constituent territories of the Russian Federation and municipalities is to ensure balanced regional budgets. From 2014 some changes in the division of revenues among the budgets of the budget system of the Russian Federation are provided, however, none of the planned measures are focused on strengthening the revenue base budgets of the constituent territories of the Russian Federation. It is worth noting that the task of providing a regional budgets with the sources of income which are equivalent to the amount of powers assigned to the state authorities still was put in the Budget message of the President of the Russian Federation (“On budget policy of the Russian Federation in 2014 - 2016”)[6].

Since none of the models of revenues and expenditure devolution are not provide absolute horizontal and vertical balance, the central place in the system of relations between the federal and regional levels authorities belongs to the formation of an optimal mechanism for the fund redistribution through inter-budget transfers. Despite all the transformations in this field, the system of inter-budget transfers in Russia remains suboptimal. “Creation of conditions for effective and responsible management of regional and municipal finances, increase of budgets’ sustainability of the constituent territories of the Russian Federation” state program highlighted main disadvantages [7]:

- mismatched patterns of inter-budget transfers with no compliance to the priorities of financial policy of the Russian Federation, in particular to the tasks on parallel expansion of independence and increased responsibility of public-law entities in the use of uncompensated receipts. In scientific publications it is possible to find a many evaluations of the system of inter-budget transfers including quite critical. Thus according to one of these evaluations in recent years the share of inter-budget transfers leveling character was about 25 - 30 % of the total amount transferred to the budgets of the constituent territories of the Russian Federation transfers. The largest part of inter-budget transfers (70 - 75%) did not provide budget alignment and did not create incentives for socio-economic development of regions [8];
- lack of transparency in the allocation of inter-budget transfers. Thus only 16.1% of budgetary subsidies were approved by the federal law on the federal budget for 2013 and the planning period of 2014 and 2015 [9];
- instability of the regulatory and methodological framework for the allocation of inter-budget transfers due to frequent changes in acts regulating the procedure of its’ calculation and provision;
- large number of inter-budget transfers, their fragmentation (i.e. focus on solving highly specialized, specific task), causing the need to provide several types of transfers that are similar in purpose;
- lack of accuracy in requirements of planning tools for financing certain expenditure commitments. The source of the problem in this case may serve as an imperfect technique and failures of the budget process participants, which directly determine the amount of transfers. In turn, errors in calculation may appear due to incorrect initial statistic or forecast data or intentional misrepresentation of the transfers’ amount;
- annual imbalance streams arising in connection with the provision of inter-budget transfers.

As we can see from this list, a significant part of the problems and shortcomings of the system of inter-budget transfers associated with the imperfect mechanism of co-financing. One of its manifestations is duplication of tasks which are provided with subsidies, and its resulting additional financial flows with the cost of administering these funds. In Budget message of the President of the Russian Federation (“On budget policy of the Russian Federation in 2014 - 2016”) it was stated that the task of consolidation



subsidies and changing of methods of their distribution has not been solved. This is evidenced by the number of types and total amount of co-financing, as well as low socio-economic efficiency. The subsidy mechanism not only unable to reduces the differentiation of public-law entities in terms of state of public finances and socio-economic development and overcoming the major problems in the constituent territories of the Russian Federation, but also appeared to be not conducive in establishing the basis for the development of competitive advantages and increasing the investment potential of the territories [6].

The third of the problems mentioned above is closely related to the low level of development of taxable capacity, inefficiency and low productivity of the public finance management for the constituent territories of the Russian Federation.

The problem of regions' differentiation in terms of economic development and standard of living of the population is not overcome. For example, in 2011 the gap of the constituent territories of the Russian Federation on indicators of per capita income and average monthly salary is estimated at five times. In the five regions with the maximum index value gross regional product per capita stated in 18 times higher than its value in five regions with its minimum index. Thus it leads to the differentiation of the constituent territories of the Russian Federation on the level of tax capacity and the concentration of the predominant part of the revenues in the budgets of a relatively small number of regions. According to the data provided in "Creation of conditions for effective and responsible management of regional and municipal finances, budgets' sustainability of the constituent territories of the Russian Federation" state program in 10 regions with the most developed economy about 45% of tax revenues paid into the consolidated budgets of the constituent territories of the Russian Federation are accumulated [7].

Statistic data provided in "Creation of conditions for effective and responsible management of regional and municipal finances, budgets' sustainability of the constituent territories of the Russian Federation" state program shows that, despite the positive trend, the degree of budgets' dependence in many constituent territories of the Russian Federation from uncompensated receipts from the federal budget remains high. Thus in 2011 the number of the constituent territories of the Russian Federation whose share of inter-budget transfers ranged from 20% to 60% of its own revenues of the consolidated budget amounted to 43 [7].

The main task in this area over the medium term is to reduce the number of the constituent territories of the Russian Federation with a high level of budget dependency. In accordance with "Creation of conditions for effective and responsible management of regional and municipal finances, budgets' sustainability of the constituent territories of the Russian Federation" state program their number by 2016 must be 5 units and by 2020 - 3 units [7]. It is assumed that the targets will be achieved through the development of tax potential of the constituent territories of the Russian Federation with a minimum level of budgetary provision.

Strengthening the revenue base of the budget is only one side of the problem. The second aspect is associated with low quality of budget management, the lack of prioritization of spending, its' low socio-economic and budgetary efficiency. Obviously, overcoming this problem also applies to the sphere of authority for the constituent territories of the Russian Federation. The role of the federal authorities lies in methodological assistance and financial incentives.

Despite the fact that the transition to budgeting oriented on results is carried out in the Russian Federation since the beginning of 2000, the main problems in this area, in our opinion, are the weak correlation between the volume of inter-budget transfers and results of the public finance management of the constituent territory of the Russian Federation. The share of inter-budget transfers incentive remains low.





## CONCLUSION

Thus, the complexity of the formation of regional budgets in Russia at the present stage appeared to be the need to achieve a balance between multiple divergent goals. On the one hand, the emphasis is made on competitive mechanisms for the distribution of transfers which in many cases involve competition. On the other hand, the priority aspect is to ensure equality of financial possibilities of the constituent territories of the Russian Federation for their powers execution and to reduce their differentiation index of budgetary provision.

It should be noted that the efficiency of public finance on the regional government level can only be achieved by using an integrated approach defining the goals and objectives of budgetary regulation, analysis of the benefits and drawbacks of the existing budget system, its risks and opportunities of development and improvement. The principles of optimization of budget relations system are similar to the basic approaches and positions that make up the basis of any economic reforms: realistic goals; internal consistency of the instruments, tasks and final objective; ensuring consistency with other elements of the budget (financial) policy and priorities of socio-economic development; consideration the specifics of the region; analysis of historical experience and practice of the other constituent territories of the Russian Federation. Adherence to these principles appeared to be one of the essential conditions for the achievement of great results in the reforming of public finance at the regional level.



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