UNIVERSITY OF NIŠ

ISSN 0354-4699 (Print)
ISSN 2406-050X (Online)
COBISS.SR-ID 87230727

FACTA UNIVERSITATIS

Series
ECONOMICS AND ORGANIZATION
Vol. 15, Nº 4, 2018

Scientific Journal **FACTA UNIVERSITATIS**
UNIVERSITY OF NIŠ
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The cover image design: **M. Ž. Ranđelović**
Publication frequency – one volume, four issues per year.

Published by the University of Niš, Republic of Serbia

Financial support: Ministry of Education, Science and Technological Development of the Republic of Serbia

Printed by "UNIGRAF-X-COPY" – Niš, Republic of Serbia

ISSN 0354 – 4699 (Print)
ISSN 2406 – 050X (Online)
COBISS.SR-ID 87230727

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FACTA UNIVERSITATIS
Series: **Economics and Organization** Vol. 15, N° 4, 2018, pp. 295 - 304
https://doi.org/10.22190/FUEO1804295S

Original Scientific Paper

HUMAN AND SOCIAL CAPITAL AS FACTORS OF INEQUALITIES IN ECONOMIC DEVELOPMENT OF EU COUNTRIES

UDC 005.96:330.34(4-672EU)
330.342:330.34(4-672EU)

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Abstract. *The importance of human and social capital in the processes of growth and economic development has been broadly discussed in the literature. There are many theoretical models of economic growth considering human or social capital. However, there is still a shortage of empirical studies concerning the dependencies between these phenomena. The purpose of this study is to examine the role which human and social capital play in the processes of economic development in the European Union countries. Empirical analysis concerns the year 2015. Owing to the fact that neither of these categories is measurable, the research uses the soft modelling method. It allows users to examine links between variables which are not directly observable (latent variables). The conducted research has demonstrated that human capital as well as social capital had a statistically significant, positive impact on the economic development of the EU countries. The obtained results also made it possible to create the rankings of the examined countries according to their stocks of human and social capital and the level of economic development.*

Key words: *human capital, social capital, economic development, soft modelling, European Union*

JEL Classification: C59, E24, O11, Z13

1. INTRODUCTION

The importance of human and social capital in the processes of growth and economic development has been broadly discussed in the literature (Benhabib & Spiegel, 1994;

Received July 16, 2018 / Accepted September 18, 2018
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Bourdieu, 1986; Coleman, 1988, 1990; Lucas, 1988; Mankiw et al., 1992; Putnam et al., 1993; Romer, 1989). Moreover, the significance of human and social capital for the processes of socio-economic development is appreciated by many international institutions conducting research in this field. The most important projects include: "Social Capital Initiative" (World Bank), "The Well-being of Nations: The Role of Human and Social Capital" (OECD) as well as "The Contribution of Social Capital in the Social Economy to Local Economic Development in Western Europe" (European Commission).

The concepts of human and social capital were developed as a response to the difficulties in explaining cross-country inequalities in economic growth. The production factors considered earlier: physical capital and labour did not sufficiently explain the differences between the rate of economic growth or levels of development in individual countries. Therefore, researchers began investigating human, social, cultural, political, and psychological factors.

In the literature there are many theoretical models of economic growth considering human or social capital. However, there is still a shortage of empirical studies concerning the dependencies between these phenomena. The purpose of the paper is to analyze the impact of human and social capital on the level of economic development of the EU countries. In this study the following definitions were adopted:

- human capital is defined as embodied in inhabitants stock of unobserved characteristics such as: education, stock of knowledge, health. It is increased through investment and it is an important factor of economic development (Skrodzka, 2015).
- social capital includes the institutions, the relationships, the attitudes and values that govern interactions among people and contribute to economic and social development (OECD, 2001).

This paper proposes the following research hypotheses:

H1a: human capital is positively associated with the level of economic development of the EU countries.

H1b: social capital is positively associated with the level of economic development of the EU countries.

Because of the multi-dimensional and intangible character of the studied phenomena, a soft-modelling method was applied. The obtained results allowed the author to realise the research objective and verify the proposed research hypotheses.

2. Research Method

The soft modelling method was developed by H. Wold (1980; 1982). The soft model consists of two sub-models: an internal one (structural model) and an external one (measurement model). The internal sub-model depicts the relationships between the latent variables on the basis of the assumed theoretical description. The external sub-model defines latent variables by means of observable variables (indicators). Indicators allow for direct observation of latent variables and are selected according to the assumed theory or the intuition of the researcher (Rogowski, 1990). A latent variable can either be defined (with the use of indicators) inductively: the approach is based on the assumption that the indicators make up latent variables (formative indicators), or deductively: when it is assumed that indicators reflect the respective theoretical notions (reflective indicators). Under the deductive approach, the latent variable, as a theoretical notion, is a point of departure for a search of empirical data (the variable is primary to a given indicator). In the inductive approach, it is the indicators that are

primary to the latent variable which they comprise. Both the approaches use latent variables that are estimated as the weighted sums of their indicators. However, depending on the definition, indicators should be characterized by different statistical properties – no correlation in the case of inductive definition and high correlation in the deductive one.

The estimation of the parameters of the soft model is performed by means of the partial least squares method (PLS method). The description of the method can be found in: (Lohmoller, 1988) or (Westland, 2015). The quality of the model is assessed with the use of determination coefficients (R^2), established for each equation. The significance of the parameters is checked by means of the standard deviations calculated with the Tukey's cut method ("2s" rule: a parameter significantly differs from zero if double standard deviation does not exceed the value of the estimator of this parameter). Besides, in the case of the external sub-model, the estimators of factor loadings can be treated as the degree in which the indicators match the latent variable that they define. The prognostic property of the model can be evaluated by means of the Stone-Geisser test, which measures the accuracy of the forecast obtained as a result of the model's application as compared with a trivial forecast. The test statistics take values from the range $<-\infty,1>$. In the ideal model, the value of the test equals 1 (the forecasts are perfectly accurate in comparison with trivial forecasts). When the value of the test equals zero, the quality of the model's forecast and the trivial forecast tend to be virtually identical. Negative values indicate a low quality of the model (its weak predictive usefulness compared with a trivial forecast).

Using the partial least squares method, it is possible to obtain the estimated values of latent variables, which can be regarded as the values of synthetic measures. They can be employed for linear ordering of the examined objects (Rogowski, 1990).

3. Specification of Soft Model

The model which was used for realization of the research objective contained the following equation

$$ED = \alpha_1 \cdot HC + \alpha_2 \cdot SC + \alpha_0 + \xi \tag{1}$$

where ED – the level of economic development, HC – human capital, SC – social capital, α_0, α_1, α_2 – structural parameters of the model, ξ – random component.

The latent variables were defined by means of observable variables on the basis of the deductive approach, i.e. the latent variable, as a theoretical concept, serves as a starting point to identify empirical data. The indicators for the model were selected based on criteria of substantive and statistical nature. The statistical data came from the Eurostat, OECD and World Bank databases. Using the available domestic and international literature, primary sets of indicators of the variables *HC*, *SC* and *ED* were developed. The selection of the research period (2015) was determined by the availability of statistical data. The developed database was checked in terms of missing data. Data shortages were overcome by using naive prognosis, consisting in replacing the lacking values by the value for the previous year.

From the statistical point of view, the following considerations were taken into account: variability of indicator values (coefficient of variation above 10%) and analysis of the quality of the estimated model (ex post analysis). The indicators which passed substantive and statistical verification are presented in Table 1.

Table 1 Indicators of latent variables

Symbol of indicator	Description of indicator	Source	Type[2]
	HUMAN CAPITAL		
*HC*1	Percentage of population aged 15-64 having completed tertiary education (%).	E	Stimulant
*HC*2	Percentage of population aged 25-64 participating in education and training (%).	E	Stimulant
*HC*3	Percentage of employees aged 15-64 having completed tertiary education (%).	E	Stimulant
*HC*4	Percentage of employees aged 25-64 participating in education and training (%).	E	Stimulant
*HC*5	Graduates at doctoral level per 1000 of population aged 25-34 (person).	E	Stimulant
*HC*6	Young people neither in employment nor in education and training (% of population aged 15 to 29).	E	Destimulant
*HC*7	Underachievement in reading, mathematics or science (% of 15-year-old students)	OECD	Destimulant
*HC*8	Percentage of population declaring their health status as very good and good (%).	E	Stimulant
*HC*9	Death rate due to chronic diseases (number per 100 000 persons aged under 65)	E	Destimulant
*HC*10	Infant mortality rate (person).	WB	Destimulant
	SOCIAL CAPITAL		
*SC*1	Participation in voluntary activities (% of people aged 16 and over).	E	Stimulant
*SC*2	Active citizens (% of people aged 16 and over)[3].	E	Stimulant
*SC*3	Frequency of getting together with relatives and friends – every week (% people aged 16 and over).	E	Stimulant
*SC*4	Public-private co-publications (per million population).	E	Stimulant
*SC*5	International scientific co-publications (per million population).	E	Stimulant
*SC*6	Communication via social media – daily (% of people aged 16 and over).	E	Stimulant
	THE LEVEL OF ECONOMIC DEVELOPMENT		
*ED*1	Gross domestic product per capita (in PPS).	E	Stimulant
*ED*2	Gross value added per employee (in PPS).	E	Stimulant
*ED*3	Agriculture, value added (% of GDP).	WB	Destimulant
*ED*4	R&D expenditure in the public sector (% of GDP).	E	Stimulant
*ED*5	R&D expenditure in the business sector (% of GDP).	E	Stimulant
*ED*6	Employment rate in age group 20-64 (%).	E	Stimulant

Source: author's own elaboration

A schematic diagram of the soft model, taking into consideration both the internal and external relationships is presented in Figure 1[4].

[2] Stimulant of latent variable – the higher the value of an indicator, the higher the level of the latent variable. Destimulant of latent variable – the higher the value of an indicator, the lower the level of the latent variable.
[3] Active citizenship in the 2015 ad-hoc module is understood as participation in activities related to political groups, associations or parties, including attending any of their meetings or signing a petition.
[4] The solid line represents internal model relationship, while the broken line – external model relationships.

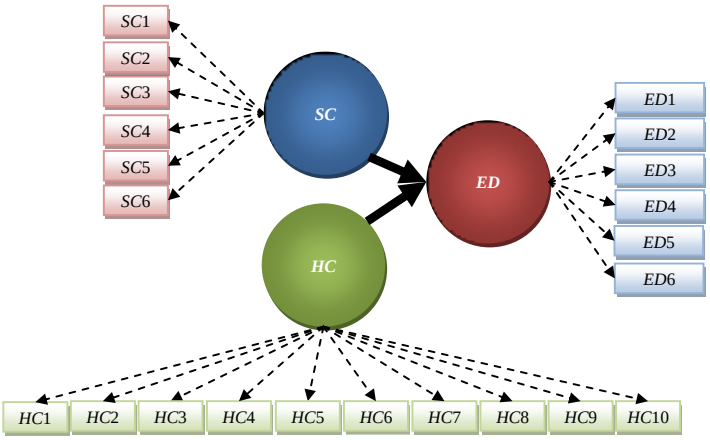

Fig. 1 Diagram of internal and external relationships in soft model
Source: author's own elaboration.

The model was estimated by means of the PLS method, which involves simultaneous estimation of the external model parameters (weights and factor loadings) and the internal model parameters (structural parameters). The estimation was conducted using the PLS software. The software was developed by J. Rogowski, professor at the Department of Economics and Management at University of Bialystok, and is available free of charge.

4. Results of Estimation

The results of the estimation of the external model are presented in Table 2. Each weight represents the relative share of a given indicator's value in the estimated value of a latent variable. Factor loadings are coefficients of correlation between indicators and latent variables, thus indicating the degree and direction in which the variability of an indicator reflects the variability of a latent variable. The ordering of indicators according to weight is performed when a latent variable is defined inductively. In the deductive approach, which was applied in this research, it is the factor loadings that are interpreted. The following interpretation of the π_{ij} factor loading was assumed:

– $|\pi_{ij}| < 0.2$ – no correlation,
– $0.2 \leq |\pi_{ij}| < 0.4$ – weak correlation,
– $0.4 \leq |\pi_{ij}| < 0.7$ – moderate correlation,
– $0.7 \leq |\pi_{ij}| < 0.9$ – strong correlation,
– $|\pi_{ij}| \geq 0.9$ – very strong correlation.

In terms of the signs of the estimated parameters, the results are consistent with the expectations. Stimulants have positive estimations of weights and factor loadings and destimulants (*HC*5, *HC*6, *HC*9, *HC*10, *ED*3) have negative ones. Moreover, all the parameters are statistically significant, in accordance with the "2s" principle (see table 2, columns "Standard deviation").

Table 2 Estimations of external relationships parameters in the soft model

Symbol of indicator	Weight	Standard deviation	Factor loading	Standard deviation
*HC*1	0.1269	0.0040	0.6946	0.0072
*HC*2	0.1838	0.0018	0.8995	0.0017
*HC*3	0.0704	0.0054	0.4889	0.0101
*HC*4	0.1819	0.0009	0.8911	0.0021
*HC*5	0.1408	0.0049	0.6470	0.0051
*HC*6	-0.1854	0.0098	-0.7085	0.0112
*HC*7	-0.1555	0.0089	-0.6939	0.0111
*HC*8	0.0962	0.0075	0.4036	0.0152
*HC*9	-0.1586	0.0102	-0.6999	0.0114
*HC*10	-0.1230	0.0025	-0.5683	0.0025
*SC*1	0.2699	0.0066	0.8740	0.0044
*SC*2	0.1897	0.0042	0.7035	0.0033
*SC*3	0.1673	0.0053	0.7773	0.0044
*SC*4	0.2065	0.0066	0.8365	0.0028
*SC*5	0.2442	0.0022	0.9403	0.0010
*SC*6	0.1491	0.0108	0.6588	0.0084
*ED*1	0.2246	0.0085	0.8169	0.0246
*ED*2	0.1993	0.0009	0.7308	0.0274
*ED*3	-0.2387	0.0109	-0.8622	0.0306
*ED*4	0.2202	0.0267	0.6944	0.0728
*ED*5	0.2500	0.0294	0.7499	0.0309
*ED*6	0.1894	0.0396	0.6584	0.0645

Source: author's own elaboration

Indicators reflecting education and training (*HC*2, *HC*4 and *HC*6) were the most important for *HC* variable. The *SC* variable was most strongly reflected by indicators related to scientific co-operation (*SC*4 and *SC*5) as well as voluntary activities (*SC*1). The *ED* variable was strongly correlated with four of the six indicators (*ED*3, *ED*1and *ED*5).

The outcomes of the internal model estimation are illustrated by the following equation

$$\hat{ED} = \underset{(0.1173)}{0.3938} \cdot HC + \underset{(0.1173)}{0.5200} \cdot SC + \underset{(0.1173)}{2.1105} \quad R^2 = 0.81 \ . \tag{2}$$

The brackets contain standard deviations calculated by means of the Tukey's test. The structural parameters are statistically significant ("2s" rule). The value of the coefficient of determination R^2 justifies the conclusion that, to a very high extent, the independent variables *HC* and *SC* determine the variability of the dependent variable *ED*. The values of the Stone-Geisser test, which verifies the soft model in terms of its predictive usefulness (see Table 3) are positive, which proves the model's high prognostic quality.

Table 3 Values of the Stone-Geisser test

Symbol of indicator	Value of S-G test
*ED*1	0.3831
*ED*2	0.2888
*ED*3	0.4663
*ED*4	0.3437
*ED*5	0.4786
*ED*6	0.2721
General	0.3072

Source: author's own elaboration

The estimations of the internal model parameters indicate a positive and statistically significant impact of human capital as well as social capital on the level of economic development of EU countries in 2015. This means that those countries which reported higher stocks of human capital also had a higher level of economic development. Moreover countries with higher stocks of social capital also had a higher level of economic development. Therefore, there are no grounds to reject the *H1a* and *H1b* hypotheses that were formulated in the study. Furthermore the impact of social capital on economic development was stronger than the impact of human capital.

Based on the synthetic measures of the variables *HC*, *SC* and *SG*, which were obtained during modelling, three rankings of the studied countries were created: a ranking of human capital, a ranking of social capital and a ranking of the level of economic development. The results are shown in Table 4.

Table 4 Rankings of the EU countries according to *HC*, *SC* and *ED* in 2015

Country	*HC*	*SC*	*ED*
Austria	7	6	5
Belgium	14	7	9
Bulgaria	27	27	27
Croatia	26	22	26
Cyprus	16	15	22
Czech Republic	15	20	12
Denmark	1	2	3
Estonia	12	13	13
Finland	3	4	8
France	9	10	11
Germany	11	11	4
Greece	23	16	25
Hungary	25	23	23
Ireland	8	9	6
Italy	21	17	18
Latvia	24	26	24
Lithuania	18	24	19
Luxembourg	5	5	1
Malta	19	18	17
Netherlands	4	3	7
Poland	20	25	21
Portugal	17	19	16
Romania	28	28	28
Slovakia	22	21	15
Slovenia	10	12	14
Spain	13	14	20
Sweden	2	1	2
United Kingdom	6	8	10

Source: author's own elaboration

The next step consisted in dividing the countries into typological groups. The boundaries of the groups were established with the use of the arithmetical mean values and standard deviation of the synthetic variable z_i (equalling 0 and 1 for each of the latent variables, respectively). The ranges assumed the following forms: group I (very high level of latent

variable): $z_i \geq 1$, group II (high level of latent variable): $0 < z_i \leq 1$, group III (low level of latent variable): $-1 < z_i \leq 0$, group IV (very low level of latent variable): $z_i \leq -1$. The results of grouping are presented in Figures 2, 3 and 4.

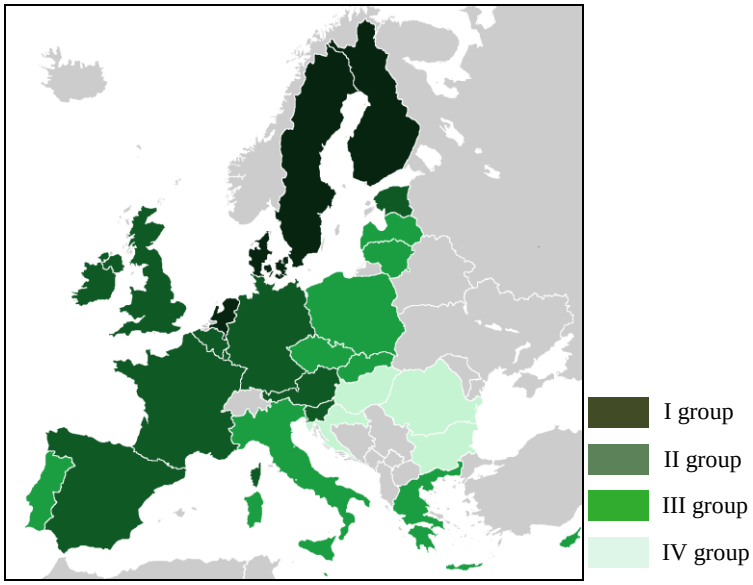

Fig. 2 The EU countries according to *HC* in 2015
Source: author's own elaboration.

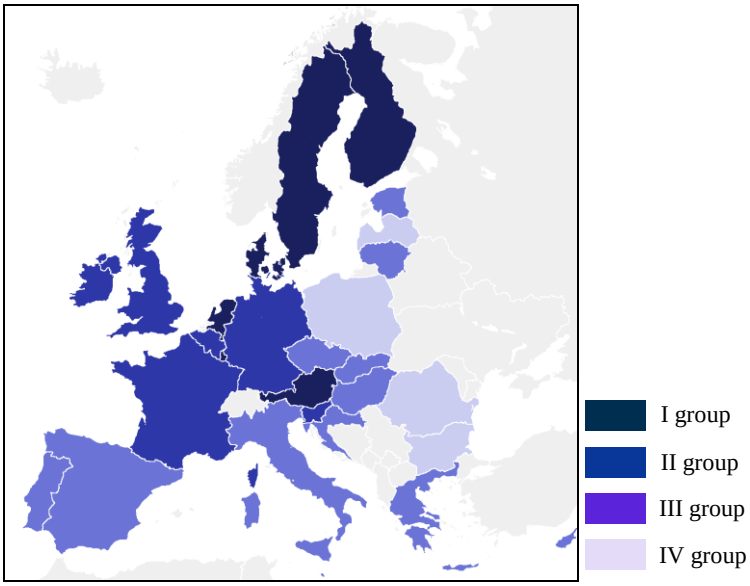

Fig. 3 The EU countries according to *SC* in 2015
Source: author's own elaboration.

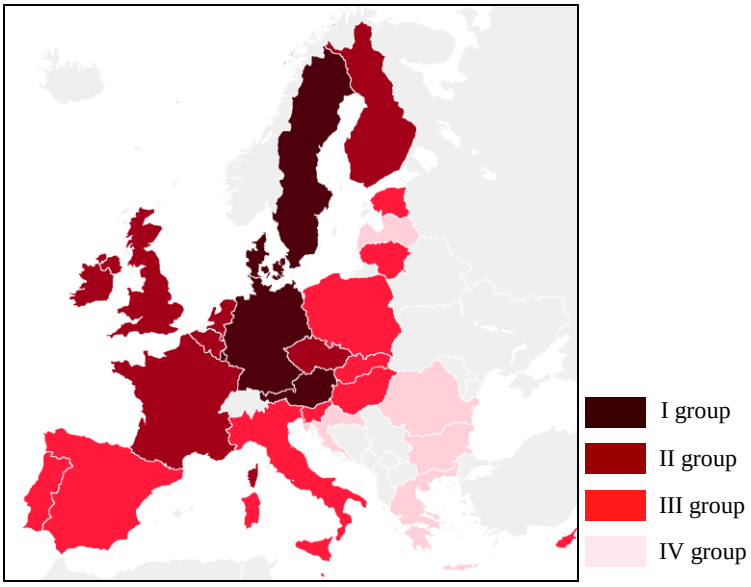

Fig. 4 The EU countries according to *ED* in 2015
Source: author's own elaboration.

5. Conclusions

The conducted research has demonstrated that human capital as well as social capital had a statistically significant, positive impact on the economic development of the EU countries.

The obtained results also made it possible to create the rankings of the examined countries according to their stocks of human and social capital and the level of economic development. Denmark and Sweden ranked high in all the six categories, whereas Romania and Bulgaria came at the bottom of the rankings.

The division into typological groups showed the differentiation of the EU countries in terms of human and social capital and the level of economic development. Very high stocks of human capital were observed in the following countries: Denmark, Sweden, Finland, the Netherlands. Four countries were characterised by very low stocks of human capital: Hungary, Croatia, Bulgaria and Romania. Six countries were qualified for the group of economies at very high stocks of social capital: Sweden, Denmark, the Netherlands, Finland, Luxemburg and Austria. Low stocks of social capital were reported for Poland, Latvia, Bulgaria and Romania. Five countries made up the group with a very high level of economic development: Luxembourg, Sweden, Denmark, Germany and Austria. A very low level of economic development was recorded in: Latvia, Greece, Croatia, Bulgaria and Romania.

Acknowledgement: *Some parts of the paper have been presented at the Second International Scientific Conference on Economics and Management – EMAN 2018.*

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LJUDSKI I DRUŠTVENI KAPITAL KAO FAKTORI NEJEDNAKOSTI U EKONOMSKOM RAZVOJU ZEMALJA EU

O značaju ljudskog i društvenog kapitala u procesima rasta i ekonomskog razvoja se široko raspravljalo u literaturi. Postoji mnogo teoretskih modela ekonomskog rasta koji uključuju ljudski ili društveni kapital. Međutim, i dalje postoji nedostatak empirijskih studija koje proučavaju zavisnosti između ovih pojava. Svrha ove studije je da ispita ulogu koju ljudski i društveni kapital igra u procesima ekonomskog razvoja u zemljama Evropske unije. Empirijska analiza se odnosi na 2015. godinu. Zbog činjenice da nijedna od ovih kategorija nije merljiva, istraživanje koristi metod mekog modeliranja, koji omogućava korisnicima da ispitaju veze između varijabli koje se ne mogu direktno posmatrati (latentne varijable). Sprovedeno istraživanje je pokazalo da ljudski kapital kao i društveni kapital imaju statistički značajan, pozitivan uticaj na ekonomski razvoj zemalja EU. Dobijeni rezultati su takođe omogućili rangiranje ispitanih zemalja u skladu sa njihovim zalihama ljudskog i društvenog kapitala i nivoom ekonomskog razvoja.

Ključne reči: *ljudski kapital, društveni kapital, ekonomski razvoj, meko modeliranje, Evropska Unija*

FACTA UNIVERSITATIS
Series: **Economics and Organization** Vol. 15, N° 4, 2018, pp. 305 - 317
https://doi.org/10.22190/FUEO1804305A

Original Scientific Paper

NON-FINANCIAL BACKGROUND OF SUCCESS AROUND GLOBAL FINANCIAL CRISIS – EVIDENCE FROM EASTERN EUROPE

UDC 338.124.4:330.526.33(4-11)

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Abstract. *The research is about the relationship between the non-financial firm characteristics and the financial progress around the global financial crisis in 2008-2009. Non-financial firm characteristics data of 218 non-listed Central and Eastern European companies come from a survey in 2006 which focused on the capital budgeting practices and other characteristics of firms – such as presence of Western management culture, firm size, and extent of management ownership. The most important financial indicators are followed up reflecting these firms' financial progresses – sales, profit before tax, net income, earnings before interest and taxes, total assets, equity, debt, return on equity, return on assets and number of employees – from 2005 to 2012. To analyse firms' sensitivity to the 2008-2009 global financial crisis, differences of financial indicators between the pre-crisis (2005-2008) and post-crisis (2009-2012) periods are examined by the non-financial indicators.*

Our results confirm that 1) firms using any accounting-based capital budgeting methods are less sensitive to the financial crisis; 2) small firms are more exposed to a volatile business environment than larger ones; and 3) firms with higher level of management ownership perform better in time of crisis than firms with lower level of management ownership.

Key words: *capital budgeting practice; financial performance; Central and Eastern Europe; global financial crisis*

JEL Classification: G31; G39; F23

Received July 31, 2018 / Revised October 19, 2018 / Accepted November 05, 2018
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1. INTRODUCTION

This paper focuses on the relationship between the financial success of firms around the 2008-2009 global financial crisis and their non-financial characteristics – such as the type of the applied capital budgeting methods, the presence of Western management culture, the firm size, and the extent of management ownership – in the Central and Eastern European (CEE) region.

Despite the fact that the theoretical background of capital budgeting is well-known and corporate finance courses have standard curriculum in it all over the world, we know much less about how companies apply those methods in practice. Furthermore, we know even less about how the use of these methods influences the financial performance of companies. And finally, it is also particularly interesting whether non-financial characteristics of firms determine the performance of companies, especially in an emerging economic environment around the time of a crisis.

Another study from the same authors, Andor and Toth (2018), deals with the progress of financial indicators in general, however not with the impact of the financial crisis in 2008-2009.

In this paper, the main research question is whether there are any differences in responsiveness to the crisis among firms using different capital budgeting techniques. Further questions related to financial sensitivity of companies are whether there is any impact of size, ownership and western management culture on responsiveness to crises among firms.

We have detailed data for several financial management features of 400 firms in ten CEE countries from Andor et al. (2015); those surveys were made around 2008. In this research, a narrower dataset of 218 companies is used with companies from nine CEE countries – Bulgaria, Croatia, the Czech Republic, Hungary, Latvia, Lithuania, Poland, Romania and Slovakia. Using the Amadeus database of Bureau Van Dijk, their most important financial indicators are followed up from 2005 to 2012. After having created general management and capital budgeting indicators (applied capital budgeting method, firm size, extent of executive ownership, and role of Western management culture) from the 2006 surveys, the statistical relationships between the firm characteristics indicators and the extent of changes in financial progress due to the 2008-2009 global financial crisis are analysed.

The rest of the paper proceeds as follows: after reviewing the relevant literature, Section 3 shows the dataset and the methodology used, while Section 4 discusses the results of the analyses. General conclusions are presented in Section 5.

2. THEORETICAL BACKGROUND

Values of companies, of course, are determined by their investment choices. Thus, the method by which companies choose their investment projects must have a crucial role. According to the general textbook approach, the discounted cash-flow (DCF) method is the proper one to maximize the value of the firm or the shareholder value of the firm. The basic concept of the DCF approach is that companies have to invest in projects which have positive expected profit, taking into consideration all costs, also including the cost of capital used by the projects. That is, the DCF approach treats the problem of time value of money.

However, DCF is not the only method widely used by companies in practice. Two other generally widespread approaches must be considered: the accounting-based (AB) method and the (simple, not discounted) payback period (PP) method. Both of them ignore the time value of money which is the most relevant inaccuracy of those methods (Ross et al. 2010). On the other hand, AB and PP approaches have certain advantages, for so many firms apply them. In case of a loan agreement when solvency can be measured more safely by accounting based cash-flow plans, an AB method can be a better choice; and the payback method can be a more useful way of analysis when a company faces limited financial resources.

Nevertheless, the general absence of the DCF approach obviously seems to be a capital budgeting analysis mistake. Our research hypothesis is, therefore, that companies using the DCF approach have better financial performance, especially during hard times, during financial crises.

We know more and more about what capital budgeting methods companies are using around the world (Graham and Harvey (2001), Brounen et al. (2004), Arnold and Hatzopoulos (2000), Holmén and Pramborg (2009), Daunfeldt and Hartwig (2014), Liljeblom and Vaihekoski (2004), Hermes et al. (2007), Truong et al. (2008), Maquieira et al. (2012), Mendes-Da-Silva and Saito (2014), Correia and Cramer (2008), Singh et al. (2012), Kester et al. (1999), Hernadi and Ormos (2012), Andor et al. (2015)). Using the output of these articles as inputs to our analyses and using the time series of the financial data series of the companies concerned, we can compare business performance with different methods. (As there were limited number of listed companies among the companies involved in the study of Andor et al. (2015) (i.e. 1% of the listed companies in the population and in the sample), the business performance can only be described by the development of accounting data instead of market price data.)

There is no clear evidence whether better performing companies are more likely to apply sophisticated capital budgeting practices than less well performing companies in difficult economic and financial circumstances. This study contributes to this field by answering the question in the case of firms in the CEE region: are there any differences in responsiveness to crises among firms using different capital budgeting techniques?

Small firm effect, i.e., smaller firms outperforming larger companies, is a well-known phenomenon among listed companies. One of the potential explanations is that smaller companies have a greater amount of growth opportunities than larger companies do. Another explanation is that small companies' business progresses tend to be more volatile, which can lead to lower prices and larger returns. E.g., Fama and French (1993) and Ferguson and Shockley (2003) show that the size effect can be confirmed for listed firms as a phenomenon reflecting a credit risk premium. The analysis of non-listed firms' financial progress may improve our understanding of the effects of size.

The ownership structure can also affect the financial progress of a firm. In the field of corporate governance, agency theory is well-known. The theory says that firms with widespread ownership structure face the problem that the company may deviate from value maximizing decisions because of the opportunistic behaviour of management (Andor and Toth, 2018).

In the CEE region, considering its post-communist past, an exciting question might be the following: is there a relationship between Western or local management culture and financial performance? It is conceivable that firms with a local management culture can adapt better to the local characteristics of the environment than firms with a Western

management culture? On the other hand, rules and approaches of Western culture can lead to better financial performance even in a changing environment without strong capitalist roots.

The impact of Western management culture in less developed countries, particularly countries in the CEE region, is an area that has not been well studied. Wade and Parkhe (2012) found that a majority of joint foreign-local ventures in Hungary adopted the values, practices, and systems of their Western partners without clear advantages. A related study by von Weltzien Hoivik (2007) examined how culture has influenced the Chinese managers' perception of some Western management instruments, such as codes of ethics. The paper concluded that Western management systems and tools do not necessarily function equally well in Chinese culture unless they are reassessed and adapted. This study can contribute to the current body of knowledge by answering the following question: do companies with a Western management culture outperform companies with a local management culture around financial crisis?

3. Data and Methodology

3.1. Sample firms

The sample firms are drawn from the 400 firms examined by Andor et al. (2015). The examined population consists of those companies that have at least 25 employees and were stratified by country and company size. The 400 companies' data were obtained by random sampling in the subgroups.

For additional financial data we use the Amadeus database of Bureau Van Dijk, which covers all firms in Europe. The Amadeus database includes standardized annual accounts (consolidated and unconsolidated), financial ratios, sectoral activities and ownership data (Amadeus, 2015). We use unconsolidated data. From the 400 firms those were dropped that did not have complete dataset on sales, EBIT, total assets, equity, debt, ROE, ROA or on the number of employees in the Amadeus dataset for the period from 2005 to 2012. The drop rate did not differ significantly (by Kruskal-Wallis test) in the subgroups. The remaining 218 firms have their seats in 9 countries: 12 in Bulgaria, 13 in Croatia, 36 in Czech Republic, 14 in Hungary, 4 in Latvia, 10 in Lithuania, 77 in Poland, 38 in Romania, and 14 in Slovakia. This sample size offers 5% margin of error with a 90% confidence level.

To answer the research questions, we formed subgroups by company characteristics, like the used capital budgeting method, the role of the Western management culture, company size, and the extent of executive ownership. Then we analysed if there is a significant difference between the financial data of the subgroups in the pre- and post-crisis period. We consider that, although the data of company characteristics were measured around 2008, these data are quite static, as they reflect the company's decisions in the long run, and their change requires the active and compelling participation of owners and management.

3.2. Financial indicators

The created financial indicators are based on the Amadeus dataset from 2005 to 2012. 4 years are chosen before and after the financial crisis. Each financial indicator is calculated as an average of a firm's 4-4 years annual changes in the underlying accounting data. To

analyse firms' sensitivity to crises, the differences of the financial indicators were calculated between the pre-crisis (2005-2008) and post-crisis (2009-2012) period. Figure 1 shows the timing aspects of the study.

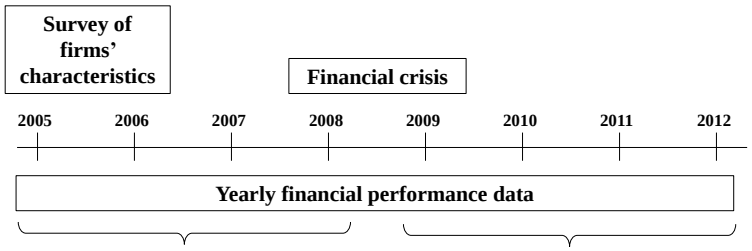

Fig. 1 Timing of the research.

The following financial indicators are defined:

- 'ΔSales%': The geometric average of the changes in a firm's annual time series of sales growth – difference between the pre-crisis (2005-2008) and post-crisis (2009-2012) periods.
- 'ΔEBIT%': The standardized slope coefficient of a regression line fitted to a firm's annual EBIT series – difference between the pre-crisis (2005-2008) and post-crisis (2009-2012) periods.
- 'ΔROE': The arithmetic average of a firm's annual ROE time series – difference between the pre-crisis (2005-2008) and post-crisis (2009-2012) periods.
- 'ΔROA': The arithmetic average of a firm's annual RAO time series – difference between the pre-crisis (2005-2008) and post-crisis (2009-2012) periods.
- 'Δequity%': The geometric average of the annual changes in a firm's equity series – difference between the pre-crisis (2005-2008) and post-crisis (2009-2012) periods.
- 'Δdebt%': The geometric average of the annual changes in a firm's debt series – difference between the pre-crisis (2005-2008) and post-crisis (2009-2012) periods.
- 'Δassets%': The geometric average of the annual changes in a firm's total assets series – difference between the pre-crisis (2005-2008) and post-crisis (2009-2012) periods.
- 'ΔD/A': The arithmetic average of a firm's annual debt to assets ratio series – difference between the pre-crisis (2005-2008) and post-crisis (2009-2012) periods.
- 'ΔD/A%': The arithmetic average of the annual changes in a firm's debt to assets ratio series – difference between the pre-crisis (2005-2008) and post-crisis (2009-2012) periods.
- 'ΔE/A': The arithmetic average of a firm's annual equity to assets ratio series – difference between the pre-crisis (2005-2008) and post-crisis (2009-2012) periods.
- 'ΔE/A%': The arithmetic average of the annual changes in a firm's equity to assets ratio series – difference between the pre-crisis (2005-2008) and post-crisis (2009-2012) periods.
- 'ΔEMP%': The geometric average of the annual changes in a firm's annual number of employees' time series – difference between the pre-crisis (2005-2008) and post-crisis (2009-2012) periods.

3.3. Capital budgeting practice indicators

The original survey questionnaire used by Andor et al. (2015) contained several questions about different capital budgeting techniques. In this research, consolidated categories were made focusing only on DCF and AB techniques. Four categories were created, which are mutually exclusive and contain all firms. The definitions of the binary variables are the same as in Andor and Toth (2018):

- 'No formal technique': it is 0 if the company did not use any formal capital budgeting analysis, otherwise it is 1.
- 'Frequent users of AB' (AB): If a firm used frequently (always or almost always) any kind of accounting-based methods (AB) only, such as accounting rate of return (ARR), return on investment (ROI), return on assets (RAO), simple earnings multiples, etc., it is 1, otherwise it is 0. The simple payback period (PP) was also in this category, since this method does not utilize a discounting technique.
- 'Frequent users of DCF' (DCF): Firms were asked whether they frequently (always or almost always) use any kind of discounted cash flow (DCF) technique such as net present value (NPV) or its variants, such as adjusted present value method (APV), equity cash flow method (ECF), free cash flow method (FCF), internal rate of return (IRR), profitability index (PI), etc. The discounted payback period (DPP) was also considered a type of DCF method. The variable is 1 if the firm answered yes (and do not use always or almost always AB methods), otherwise it is 0.
- 'Frequent users of AB and DCF' (AB&DCF): this variable is 1 if the firm reported using both AB and DCF technique for their investment decisions, otherwise it is 0.

3.3. Western management culture indicator

To examine the role of the Western management culture, the following binary variable is created:

- 'Western management culture': This is 1 if the company reported dominance of a foreign management culture that was rooted in Western culture such as Western Europe, USA, or Canada; otherwise it is 0. (The original survey question was: "*Which country's management culture dominates in your firm (besides the local one)?*")

3.4. Other indicators

The general management indicators are the company size, and the extent of executive ownership. The created binary variables for those are the following:

- 'Small size': This is 1 if a firm's number of employees is smaller than 250 (and with sales revenue and/or total assets below 50 million Euros); otherwise it is 0.
- 'Low percentage of ownership': This is 1 if the management owns less than 10% of the company; otherwise it is 0.

3.5. Statistical tests

The standard method for testing the difference between two means is the two-sample T-test. However, we reject the null hypothesis by Anderson-Darling Test that the financial performance indicators' distributions are normal at 10% significance level in all cases. Table 1 shows the descriptive statistics of financial indicators.

Table 1 Descriptive statistic of financial indicators.

Variable	Mean	StDev	Min	Q1	Median	Q3	Max	Skewness	Kurtosis
ΔSales%	-0.129	0.237	-1.093	-0.233	-0.098	-0.001	0.902	-0.48	3.83
ΔEBIT%	-1.484	0.761	-0.098	-0.701	-0.020	0.418	1.467	1.47	-0.05
ΔROE	-0.098	0.272	-1.646	-0.190	-0.045	0.015	1.172	-1.06	9.39
ΔROA	-0.035	0.083	-0.551	-0.068	-0.014	0.008	0.212	-1.62	6.94
ΔEquity%	-0.167	0.365	-2.291	-0.272	-0.125	0.015	1.294	-1.81	10.56
ΔDebt%	-0.136	0.357	-1.569	-0.313	-0.108	0.082	1.204	-0.35	2.79
ΔAssets%	-0.130	0.221	-1.156	-0.250	-0.093	-0.006	0.870	-0.71	4.94
Δ(D/A)%	-0.022	0.126	-0.375	-0.093	-0.025	0.051	0.363	0.14	0.86
Δ(E/A)%	0.022	0.126	-0.362	-0.051	0.025	0.093	0.375	-0.14	0.86
ΔEMP%	-0.056	0.187	-1.109	-0.137	-0.021	0.014	0.612	-0.93	7.24

Since the indicators are not normally distributed, the Mann-Whitney U-test can be used to compare the populations represented by the subsamples. All of the test's assumptions hold in all cases: the variables are measured on a continuous scale; the subgroups and the data in the subgroups are independent; and none of the variables is normally distributed.

4. RESULTS

4.1. Capital budgeting practice – Did companies applying theoretically better capital budgeting methods have more positive/negative sensitivity to the financial crisis in 2008?

Table 2 shows the descriptive statistics of the changes of financial progress variables around the crisis in groups of firms using different capital budgeting techniques. The p-values of pairwise Mann-Whitney U-tests are calculated between the financial progress changes results of firms using 'No formal' and using any sophisticated capital budgeting practices. Only those panels which contain significant results are shown.

Indicators reflecting sensitivity in Table 3 show interesting results. It seems that the AB user firms' growth rate of sales (ΔSales%), total assets (ΔAssets%) and debts (ΔDebt%) are less sensitive to an economic crisis than those of the ad-hoc firms' are. These differences are significant for the entire population only between AB and ad-hoc companies. The results support the intuitive expectation that firms with more stable sales growth rates can access credits easier, because stable sales growth rates lead to less risky credit metrics. Conversely, it is also a reasonable explanation that the advantages of easy credit access motivate the management to focus on stable accounting indicators.

It is a surprising result that the 'AB&DCF' companies' ΔROA indicators show significant sensitivity as opposed to ad-hoc firms. Although firms using purely AB or DCF method show a less sensitive picture in the sample than mixed firms and more sensitive than ad-hoc firms, still, the Mann-Whitney's H_0 cannot be rejected in either case. There are two possible explanations for the outstanding sensitivity of mixed firms. Combining two fundamentally different methods weakens the responsiveness of a firm because the potentially contradictory recommendations of different methods in a crisis situation further complicate the decision making process. On the other hand, it is conceivable that sensitive companies with volatile financial performance try to apply more diverse, more sophisticated methods to reduce the

risk of deficient decisions. Additional research is needed to clarify which one is the relevant answer.

Table 2 Descriptive statistics of changes of financial variables around the crisis in 2008-2009 grouped by capital budgeting practice indicators, and p-values of Mann-Whitney U-tests between financial progress results of firms using 'No formal' and using other capital budgeting practices sets, from 2005 to 2012.

Variable	N	Mean	StDev	Min	Q1	Median	Q3	Max	P-value
Panel B: ΔSales%									
No formal	*45*	*-0.17*	*0.28*	*-0.83*	*-0.31*	***-0.09***	*-0.01*	*0.69*	
AB	52	-0.07	0.15	-0.66	-0.14	**-0.07**	0.00	0.25	**0.055***
DCF	29	-0.14	0.20	-0.88	-0.18	**-0.12**	-0.04	0.18	0.903
AB&DCF	92	-0.14	0.26	-1.09	-0.25	**-0.12**	0.00	0.90	0.903
Panel E: ΔROA									
No formal	*45*	*-0.024*	*0.072*	*-0.292*	*-0.040*	***-0.005***	*0.010*	*0.100*	
AB	52	-0.038	0.103	-0.551	-0.078	**-0.011**	0.011	0.144	0.472
DCF	29	-0.019	0.070	-0.183	-0.044	**-0.010**	0.015	0.118	0.748
AB&DCF	92	-0.043	0.079	-0.241	-0.082	**-0.022**	0.004	0.212	**0.064***
Panel F: ΔAssets%									
No formal	*45*	*-0.156*	*0.161*	*-0.477*	*-0.296*	***-0.138***	*-0.035*	*0.070*	
AB	52	-0.084	0.187	-0.675	-0.174	**-0.067**	0.017	0.498	**0.051***
DCF	29	-0.119	0.176	-0.535	-0.181	**-0.088**	-0.022	0.264	0.324
AB&DCF	92	-0.147	0.270	-1.156	-0.282	**-0.095**	0.025	0.870	0.424
Panel G: ΔDebt%									
No formal	*45*	*-0.192*	*0.303*	*-1.055*	*-0.353*	***-0.140***	*0.039*	*0.256*	
AB	52	-0.067	0.256	-0.734	-0.208	**-0.079**	0.115	0.588	**0.095***
DCF	29	-0.128	0.238	-0.760	-0.256	**-0.141**	0.078	0.260	0.485
AB&DCF	92	-0.150	0.448	-1.569	-0.452	**-0.125**	0.113	1.204	0.600

The last column shows p-values of pairwise Mann-Whitney U tests calculated between the 'No formal technique' and the referred capital budgeting practice indicator. *, **, *** means: the H0 (there's no difference in medians) can be rejected at the 10, 5, 1 percent significance level, respectively.

It should be mentioned that in the whole research there is only one significant difference between the financial indicators of AB and DCF firms. In the case of ΔSales% the p-value of the Mann-Whitney test between AB (-0.07) and DCF (-0.12) is 0.082. The explanation for this difference might be that firms with stable sales growth rate (and with moderate growth opportunities) tend to base their decision-making processes on accounting indicators, because a less volatile environment determines their long-term performance, and AB indicators emphasize short-term efficiency over long-term performance. Besides, the research cannot prove any significant difference between companies using financial indicators of the AB and DCF. As the dataset is from the CEE region where the DCF methods are used less often and the AB methods are used more often than in other regions of the world (see e.g. Andor et al., 2015), further research is needed to clarify whether this is a regional characteristic, or it is the case in general.

4.2. Western management culture – Did companies with Western management culture have more positive/negative sensitivity to the financial crisis in 2008?

Table 3 shows the descriptive statistics of the financial indicators grouped by Western or local management culture.

Only the equity and assets growth (ΔEquity%, ΔAssets%) of firms with Western management culture shows significantly less sensitivity to the crisis as opposed to companies with local style culture.

Table 3 Descriptive statistics of financial indicators separated by the type of management culture (2005-2012).

Variable	Wes.	Mean	StDev	Min	Q1	Median	Q3	Max	P-Value
ΔSales%	1	-0.131	0.210	-1.093	-0.235	**-0.109**	-0.001	0.390	0.651
	0	-0.128	0.261	-0.880	-0.211	**-0.086**	-0.002	0.903	
ΔEBIT%	1	-0.071	0.724	-1.475	-0.644	**-0.001**	0.359	1.467	0.669
	0	-0.122	0.795	-1.484	-0.791	**-0.023**	0.593	1.134	
ΔROE	1	-0.099	0.306	-1.646	-0.198	**-0.046**	0.033	1.172	0.778
	0	-0.097	0.240	-1.232	-0.177	**-0.043**	0.008	0.977	
ΔROA	1	-0.027	0.081	-0.241	-0.073	**-0.011**	0.017	0.212	0.217
	0	-0.041	0.085	-0.551	-0.064	**-0.017**	0.003	0.144	
ΔEquity%	1	-0.122	0.310	-1.346	-0.247	**-0.106**	0.055	0.935	**0.097***
	0	-0.207	0.406	-2.291	-0.294	**-0.146**	-0.010	1.294	
ΔDebt%	1	-0.128	0.406	-1.569	-0.284	**-0.097**	0.061	1.204	0.755
	0	-0.143	0.308	-1.055	-0.317	**-0.113**	0.095	0.702	
ΔAssets%	1	-0.111	0.232	-1.156	-0.205	**-0.079**	0.023	0.870	**0.097***
	0	-0.148	0.209	-1.109	-0.276	**-0.106**	-0.030	0.498	
Δ(D/A)%	1	-0.030	0.123	-0.346	-0.104	**-0.028**	0.046	0.327	0.416
	0	-0.016	0.130	-0.375	-0.082	**-0.015**	0.056	0.363	
Δ(E/A)%	1	0.030	0.123	-0.327	-0.046	**0.028**	0.104	0.346	0.416
	0	0.016	0.130	-0.363	-0.056	**0.015**	0.082	0.375	
ΔEMP%	1	-0.027	0.081	-0.241	-0.073	**-0.011**	0.017	0.212	0.217
	0	-0.041	0.085	-0.551	-0.064	**-0.017**	0.003	0.144	

W. cult.=1: Western management culture, N=103; W. cult.=0: local management culture, N=115.
The last column shows the p-values of Mann-Whitney U tests. *, **, *** means: the H0 (there's no difference in medians) can be rejected at the 10, 5, 1 percent significance level, respectively.

To conclude the above, the ΔAssets% and ΔEquity% paths of the firms with Western management culture are less sensitive to a crisis than those of the firms with local management culture. Although we did not find significant differences in any other financial indicators, the sample data suggest that firms with Western management culture tend to preserve operational efficiency, and try to decrease financial leverage in time of crisis.

4.3. Size and executive ownership

Table 4 shows the descriptive statistics of the financial indicators separated by the size of the firm. The p-values are the results of pairwise Mann-Whitney U tests.

Table 4 Descriptive statistics of financial indicators separated by firm size (2005-2012).

Variable	Size	Mean	StDev	Min	Q1	Median	Q3	Max	P-Value
ΔSales%	1	-0.169	0.220	-0.827	-0.275	**-0.130**	-0.034	0.390	**0.093***
	0	-0.118	0.242	-1.093	-0.212	**-0.086**	0.004	0.903	
ΔEBIT%	1	-0.340	0.763	-1.484	-1.061	**-0.297**	0.086	1.467	**0.006*****
	0	-0.028	0.748	-1.475	-0.682	**0.021**	0.487	1.429	
ΔROE	1	-0.149	0.156	-0.523	-0.253	**-0.124**	-0.035	0.252	**0.001*****
	0	-0.084	0.296	-1.646	-0.153	**-0.025**	0.027	1.172	
ΔROA	1	-0.054	0.069	-0.292	-0.090	**-0.028**	-0.011	0.041	**0.005*****
	0	-0.029	0.086	-0.551	-0.062	**-0.008**	0.012	0.212	
ΔEquity%	1	-0.209	0.247	-0.787	-0.377	**-0.212**	-0.072	0.697	**0.004*****
	0	-0.154	0.393	-2.291	-0.243	**-0.084**	0.029	1.294	
ΔDebt%	1	-0.115	0.356	-1.055	-0.193	**-0.098**	0.099	0.940	0.470
	0	-0.142	0.358	-1.569	-0.320	**-0.109**	0.068	1.204	
ΔAssets%	1	-0.150	0.244	-0.795	-0.280	**-0.125**	-0.040	0.870	0.146
	0	-0.125	0.214	-1.156	-0.224	**-0.085**	0.010	0.498	
Δ(D/A)%	1	-0.039	0.125	-0.316	-0.111	**-0.057**	0.025	0.334	0.190
	0	-0.018	0.127	-0.375	-0.086	**-0.019**	0.056	0.363	
Δ(E/A)%	1	0.039	0.125	-0.334	-0.025	**0.057**	0.111	0.316	0.190
	0	0.018	0.127	-0.363	-0.056	**0.019**	0.086	0.375	
ΔEMP%	1	-0.054	0.069	-0.292	-0.090	**-0.028**	-0.011	0.041	**0.005*****
	0	-0.029	0.086	-0.551	-0.062	**-0.008**	0.012	0.212	

Size=1: small firms, N=49; Size=0: large and medium firms, N=169. The last column shows the p-values of Mann-Whitney U tests. *, **, *** means: the H0 (there's no difference in medians) can be rejected at the 10, 5, 1 percent significance level, respectively.

The difference of sales growth in pre- and post-crisis period (ΔSales%) is -13% in small companies, while -8.6% in large firms. The difference of EBIT growth (ΔEBIT%) in pre- and post-crisis period is -29.7% in small companies, while 2.1% in large firms. It seems that size effect not affects operational efficiency, but small firms' sales and EBIT growth are more sensitive to a crisis than those of the large firms.

The difference of ROE and RAO in pre- and post-crisis period (ΔROE and ΔROA) is significantly higher in small firms, which suggests that small firms are more exposed to a volatile business environment. Small firms seem to use mainly equity instead of loans to react to the changes of the economic environment.

Table 5 shows the descriptive statistics of financial indicators grouped by the extent of management ownership.

The negative difference of sales, ROE, ROA, equity, and total assets growth in the pre- and post-crisis period is significantly higher in those firms where the percentage of the management ownership is high. This suggests that firms with high percentage of management ownership performs better in a volatile market environment than firms with low percentage of management ownership and where the management uses the owners' equity to finance daily operations.

Table 5 Descriptive statistics of financial indicators separated by the extent of management ownership (2005-2012).

Variable	Own.	Mean	StDev	Min	Q1	Median	Q3	Max	P-Value
ΔSales%	1	-0.117	0.239	-1.093	-0.213	**-0.089**	0.005	0.903	**0.015****
	0	-0.219	0.209	-0.808	-0.329	**-0.140**	-0.063	-0.004	
ΔEBIT%	1	-0.041	0.760	-1.475	-0.683	**0.012**	0.496	1.467	**0.002*****
	0	-0.520	0.636	-1.484	-1.101	**-0.433**	-0.043	1.091	
ΔROE	1	-0.091	0.283	-1.646	-0.178	**-0.036**	0.020	1.172	**0.011****
	0	-0.155	0.166	-0.462	-0.266	**-0.167**	-0.041	0.252	
ΔROA	1	-0.032	0.084	-0.551	-0.063	**-0.011**	0.010	0.212	**0.053****
	0	-0.056	0.074	-0.292	-0.088	**-0.036**	-0.010	0.041	
ΔEquity%	1	-0.153	0.381	-2.291	-0.246	**-0.102**	0.026	1.294	**0.001*****
	0	-0.268	0.189	-0.723	-0.387	**-0.276**	-0.122	0.067	
ΔDebt%	1	-0.127	0.353	-1.569	-0.297	**-0.106**	0.078	1.204	0.579
	0	-0.201	0.388	-1.055	-0.535	**-0.146**	0.094	0.388	
ΔAssets%	1	-0.117	0.218	-1.156	-0.203	**-0.080**	0.007	0.870	**0.012****
	0	-0.226	0.218	-0.795	-0.370	**-0.191**	-0.061	0.158	
Δ(D/A)%	1	-0.020	0.128	-0.375	-0.089	**-0.025**	0.054	0.363	0.532
	0	-0.040	0.113	-0.314	-0.144	**-0.028**	0.036	0.163	
Δ(E/A)%	1	0.020	0.128	-0.363	-0.054	**0.025**	0.089	0.375	0.532
	0	0.040	0.113	-0.163	-0.036	**0.028**	0.144	0.314	
ΔEMP%	1	-0.032	0.084	-0.551	-0.063	**-0.011**	0.010	0.212	**0.053***
	0	-0.056	0.074	-0.292	-0.088	**-0.036**	-0.010	0.041	

Ownership=1: low management ownership, N=192; Ownership=0: high management ownership, N=26.
The last column shows the p-values of Mann-Whitney U tests. *, **, *** means: the H0 (there's no difference in medians) can be rejected at the 10, 5, 1 percent significance level, respectively.

5. CONCLUSIONS

The research provides evidence on the relation between firms' non-financial characteristics and financial performance around the financial crisis in 2008-2009 – carried out in 218 firms in the Central and Eastern European region.

The results confirm that firms using any accounting-based capital budgeting methods were less sensitive to the financial crisis. However, firms using both AB and DCF methods did not have any advantage against ad-hoc firms. There are two possible explanations. Combining two fundamentally different methods weakens the responsiveness of a firm because the potentially contradictory recommendations of different methods in a crisis situation further complicates the decision making process. On the other hand, it is conceivable that sensitive companies with volatile financial performance try to apply more diverse, more sophisticated methods to reduce the risk of deficient decisions. Additional research is needed to clarify which one of the above is the relevant answer.

The results show that small firms are more exposed to a volatile business environment than larger ones. This supports the theory of small firm effect. However, this result applies to non-listed companies, while the small firm effect can be interpreted in the research field of Capital Asset Pricing Model. Exploring the exact context requires further research, though.

Finally, the results confirm that firms with high percentage of management ownership perform better in time of crisis than firms with low percentage of management ownership. This result supports the theory of agency costs. If the owners have a strong influence on company decisions, then their interests are less affected.

Acknowledgement*: Some parts of this paper have been presented at the 2nd International Scientific Conference – EMAN 2018 (www.eman-conference.org).*

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NE-FINANSIJSKI OSNOV USPEHA U VREME GLOBALNE FINANSIJSKE KRIZE – PRIMERI IZ ISTOČNE EVROPE

Istraživanje se bavi odnosom između ne-finansijskih karakteristika firmi i finansijskim napretkom u vreme globalne finansijske krize 2008-2009. Podaci o ne-finanskijskim karakteristikama 218 firmi koje se ne kotiraju na berzi iz Srednje i Istočne Evrope dobijeni sun a osnovu ankete sprovedene u 2006. godini, koja se fokusirala na prakse budžetskog finansiranja i druge karakteristike firmi – kao što su prisustvo zapadnjačkog modela upravljanja, veličina firme i stepen vasništva menadžmenta. Prate se ajvažniji finansijski indikatori koji odražavaju finansijski napredak ovih firmi –prodaja, dobit pre oporezivanja, neto prihod, dobit pre kamate i poreza, ukupna aktiva, kapital, dug, povrat na kapital, prinos na aktivu i broj zaposlenih – od 2005. do 2012. Da bi se analizirala osetljivosat firme na globalnu finansijksu krizu 2008-2009, istraživane su razlike između perioda pre krize (2005-2008) i posle nje (2009-2012) uz pomoć ne-finansijskih indikatora.

Naši rezultati potvrđuju da 1) firme koje koriste bilo koju metodu računovodstveno-zasnovanog kapitalnog budžetiranja su manje osetljive na finansijsku krizu; 2) male firme su izloženije nestalnom poslovnom okruženju od velikih; 3) firme sa većim nivoom upravljanja vlasništvom imaju bolje performance u vremenu krize od onih sa nižim nivoom upravljanja vlasništvo.

Ključne reči: *praksa kapitalnog budžetiranja; finansijske performance; Srednja i Istočna Evropa; globalna finansijska kriza*

FACTA UNIVERSITATIS
Series: **Economics and Organization** Vol. 15, N° 4, 2018, pp. 319 - 329
https://doi.org/10.22190/FUEO1804319J

Original Scientific Paper

THE EFFECTS OF VOLATILITY SPILLOVER ON THE LARGEST GLOBAL FINANCIAL MARKET SEGMENTS

UDC 336.76

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Abstract. *The aim of the paper is to present and analyse indicators of financial connectedness and volatility spillover on important segments of the global financial market – the stock market, bond market, CDS market, and foreign exchange market. Total, net, and directional measures of volatility spillover are presented and analysed, indicating the level of connectedness of countries' particular market segments and the level of volatility spillover in periods of crisis and stability.*

Key words: *financial connectedness, generalised VAR, volatility spillovers, global financial market segments*

JEL Classification: G01, G15, C32, E44

1. INTRODUCTION

Financial connectedness is an important characteristic of global financial markets. Its level and behaviour are very significant for financial risk measurement and management. Volatility spillover effects have a direct effect on the market and credit risk, with possible pronounced systemic consequences, particularly in crisis periods. Throughout history, the crises have tended to occur at regular intervals and have often had similar consequences (Reinhart & Rogoff, 2008). During crises, volatility usually increases and spills over into other markets and asset classes. Thus, it is important to measure and record volatility spillovers for at least two reasons: to get early warning signals of upcoming crises and/or to follow the duration of the ongoing one.

Diebold and Yilmaz (2012) propose volatility spillover measures based on forecast error variance decompositions from vector autoregressions (VARs). VAR variance decompositions present how much of the *H*-step-ahead forecast error variance of a variable *i* is due to

Received September 10, 2018 / Accepted October 31, 2018
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innovations in another variable *j* (Sims, 1980). Spillover measures based on variance decompositions are interesting because they could provide an answer to the question of how much of a variable's *i* future uncertainty is due to shocks occurring at variable *j*. In addition, they allow for spillover at different time horizons. The proposed indicators can be used to measure and track volatility spillover across asset classes, portfolios, and markets, both within and between countries. They propose total and directional spillover measures. The total volatility spillover measure shows spillover from (to) each market *i*, to (from) all other markets, added across *i*. Directional spillovers offer a more detailed picture of volatility spillover from (to) a particular market. Besides investigating spillovers across identical asset classes in various countries, or the same asset class within one country across different industry sectors, of even more profound interest is the spillover effect among different asset classes. Volatility spillover between different asset classes is especially interesting when investigating different crisis periods. In the last global crisis the spillover happened from credit markets to equity markets, with further effects on bond and commodity markets. The transmission of volatility shocks has significant effects on portfolio choices and asset allocation.

2. Literature Review

The main econometric methods for estimation of volatility spillovers are the GARCH-based and VAR-based models.

Diebold and Yilmaz (2009) developed a VAR-based volatility spillover measure which was later modified and improved. Based on the generalised vector autoregressive framework in which forecast-error variance decompositions are invariant to the variable ordering, Diebold and Yilmaz (2012) propose measures of total and directional volatility spillovers. They estimate daily volatility spillovers across the US stock, bond, foreign exchange, and commodity markets over a ten year period from January 1999 to January 2010, and show that although significant volatility fluctuations were present in all four markets, cross-market volatility spillovers were limited until the global financial crisis. As the crisis intensified, so did the volatility spillovers, with particularly important spillovers from the stock market to other markets after the collapse of Lehman Brothers in September 2008.

Many studies have used Diebold and Yilmaz's procedure to estimate volatility spillovers.

Duncan and Kabundi (2013) use and extend the spillover methodology. They analyse domestic and foreign sources of volatility spillover for South African bonds, commodities, currencies, and equities. Based on the data for the period 1996–2010, they investigate bidirectional spillovers between domestic assets and volatility coming from shocks in the global financial market. They find that spillovers increased during both domestic and foreign crises, and that domestic spillovers significantly exceeded foreign spillovers. Their findings suggest a high level of systemic risk that was mostly related to internal factors. The main transmitters of spillovers were shocks in commodity and equity markets.

Alter and Beyer (2012) extend Diebold and Yilmaz's methodology and develop measures of the strength of spillover effects. They quantify spillovers between sovereign credit markets and banks in the euro area. Spillovers are estimated based on daily CDS spread changes. They take into account interdependencies between sovereign and bank CDS spreads and assess the systemic effect of an unexpected shock to the creditworthiness of a particular sovereign or country-specific bank index on other sovereign or bank CDSs in

the period October 2009–July 2012. Their Contagion Index measures the average potential spillover among sovereigns, among banks, from sovereigns to banks, and from banks to sovereigns. The results show growing interdependency between banks and sovereigns, which represents a potential source of systemic risk and contagion.

Antonakakis and Vergos (2013) explore sovereign yield spread spillovers between the eurozone core and periphery countries in the periods of global and sovereign debt crisis in Europe. They calculate the spillover indices of Diebold and Yilmaz (2012) and conclude that bond yield spread shocks coming from the periphery eurozone countries to the core eurozone countries have an effect on the core countries that is three times stronger than vice versa. They stress the increased vulnerability of the eurozone from shocks originating predominantly in the periphery countries.

Louzis' (2015) study examines volatility spillovers between the eurozone money, stock, foreign exchange, and bond markets. Their empirical results, based on the data for the period 2000–2012, suggest a high level of total volatility spillover. The stock markets across the eurozone are identified as the main transmitters of volatility spillover, while for the most part the core countries transmit volatility spillovers to the periphery. The money, FX, and bond markets are receivers of spillovers, with the exception of Greek bonds, which transmitted spillovers during the Greek sovereign debt crisis in 2011–2012.

3. Methodology Overview

Diebold and Yilmaz initially based their total spillover measure on a simple VAR framework (with possible order-dependent results due to the Cholesky factor orthogonalisation) and progressed to directional measures (Diebold & Yilmaz, 2009). The methodology to calculate the directional volatility spillover measures is based on the generalized VAR, in which forecast-error variance decompositions are invariant to the variable ordering (Diebold & Yilmaz, 2012). The proposed methodology is based on variance decomposition on an N-variable VAR(*p*).

The starting point is a covariance stationary *N*-variable VAR(*p*), $x_t = \sum_{\mathrm{i}=1}^{p} \Phi_{\mathrm{i}}\, x_{t-i} + \varepsilon_t$, where $\varepsilon \sim (0, \Sigma)$ is a vector of independently and identically distributed disturbances. The moving average presentation is $x_t = \sum_{i=0}^{\infty} \mathrm{A_i}\, \varepsilon_{t-i}$, where the $N \times N$ matrices of coefficients A_i complies with recursion $A_i = \Phi_1 A_{i-1} + \Phi_2 A_{i-2} + \ldots + \Phi_{\mathrm{p}} A_{i-p}$, where A_0 is a $N \times N$ identity matrix and $A_i = 0$ for $i < 0$. The moving average coefficients are very important for understanding the dynamics of the system. The variance decompositions allow the division of each variable's forecast error variance into parts that are attributable to different system shocks. In addition, they allow assessing the part of the *H*-step ahead of error variance in forecasting x_i that is due to schocks in x_j, where $\forall j \neq i$, for each *i*.

In order to calculate variance decompositions, orthogonal innovations are required, whereas VAR innovations are generally contemporaneously correlated. Identification schemes based on the Cholesky factorisation achieve orthogonality, but the variance decompositions then depend on the ordering of the variables. Hence, the generalized VAR framework of Koop, Pesaran, and Potter (1996) and Pesaran and Shin (1980), KPPS, is followed here, which produces variance decompositions that are invariant to ordering. Instead of the attempt to orthogonalise shocks, the generalised approach allows for correlated shocks but accounts appropriately for the correlation using the historically observed distribution of the errors. Since shocks to each variable are not orthogonalised, the sum of the contributions to the variance of the forecast error does not have to be equal to one.

3.1. Variance shares

Own variance shares are the fractions of the *H*-step-ahead error variances in forecasting x_i that are due to shocks to x_i, for $i = 1,2,\ldots,N$. On the other hand, cross variance shares or spillovers are fractions of the *H*-step-ahead error variances in forecasting x_i that are due to shocks to x_j, for $i,j = 1,2,\ldots,N$, such that $i \neq j$.

KPPS *H*-step-ahead forecast error variance decompositions are denoted by $\theta_{ij}^{g}(H)$, and for $H=1,2,\ldots$, as follows

$$\theta_{ij}^{g}(H) = \frac{\sigma_{jj}^{-1}\sum_{h=0}^{H-1}\left(e_i' A_h \Sigma e_j\right)^2}{\sum_{h=0}^{H-1}\left(e_i' A_h \Sigma A_h' e_j\right)} \tag{1}$$

where Σ is the variance matrix for error vector ε, σ_{jj} is the standard deviation of the error term for the *j*th equation, and e_i is the selection vector having 1 as the *i*th element and 0 otherwise. Since the sum of elements in each row of the variance decomposition table is not equal to 1, as previously stated, in order to be able to use the decomposition matrix in the calculation of the spillover measure, each element of the variance decomposition matrix is normalised by the row sum:

$$\tilde{\theta}_{ij}^{g}(H) = \frac{\theta_{ij}^{g}(H)}{\sum_{j=1}^{N}\theta_{ij}^{g}(H)} \tag{2}$$

where $\sum_{j=1}^{N}\tilde{\theta}_{ij}^{g}(H) = 1$ and $\sum_{i,j=1}^{N}\tilde{\theta}_{ij}^{g}(H) = N$.

3.2. Total volatility spillover measure

Total volatility spillover index is based on volatility contributions from the KPPS variance decomposition:

$$S^{g}(H) = \frac{\sum_{i,j=1,i\neq j}^{N}\tilde{\theta}_{ij}^{g}(H)}{\sum_{i,j=1}^{N}\tilde{\theta}_{ij}^{g}(H)} \times 100 = \frac{\sum_{i,j=1,i\neq j}^{N}\tilde{\theta}_{ij}^{g}(H)}{N} \times 100 \tag{3}$$

This index measures the contribution of volatility shock spillovers across asset classes to the total forecast error variance (Diebold & Yilmaz, 2012, p.59).

3.3. Directional volatility spillover measures

Generalized VAR enables comprehending in more detail the direction of the volatility spillovers across different asset classes. Directional indices are calculated based on normalised elements of the generalised variance decomposition matrix.

Directional volatility spillovers received by market *i* from all other markets *j* are presented as:

$$S_{i\cdot}^{g}(H) = \frac{\sum_{j=1,j\neq i}^{N}\tilde{\theta}_{ij}^{g}(H)}{\sum_{i,j=1}^{N}\tilde{\theta}_{ij}^{g}(H)} \times 100 = \frac{\sum_{j=1,j\neq i}^{N}\tilde{\theta}_{ij}^{g}(H)}{N} \times 100 \tag{4}$$

Directional volatility spillovers transmitted by market *i* to all other markets *j* is denoted in a similar way:

$$S_{\cdot i}^{g}(H)=\frac{\sum_{j=1,\,j\neq i}^{N}\tilde{\theta}_{ij}^{g}(H)}{\sum_{i,\,j=1}^{N}\tilde{\theta}_{ij}^{g}(H)}\times 100=\frac{\sum_{j=1,\,j\neq i}^{N}\tilde{\theta}_{ij}^{g}(H)}{N}\times 100 \tag{5}$$

Directional measures represent a decomposition of total spillover to spillovers coming from (or to) a specific source.

3.4. Net volatility spillover measures

Net volatility spillover from market *i* to all other markets *j* can be calculated as:

$$S_{i}^{g}(H)=S_{\cdot i}^{g}(H)-S_{i\cdot}^{g}(H) \tag{6}$$

It is the difference between volatility shocks transferred to and received from all other markets. It provides information about how much, in net terms, each market contributes to the volatility of other markets.

3.5. Net pairwise volatility spillover measures

Finally, net pairwise volatility spillovers are defined as:

$$S_{ij}^{g}(H)=\left(\frac{\tilde{\theta}_{ji}^{g}(H)}{\sum_{i,k=1}^{N}\tilde{\theta}_{ik}^{g}(H)}-\frac{\tilde{\theta}_{ij}^{g}(H)}{\sum_{j,k=1}^{N}\tilde{\theta}_{jk}^{g}(H)}\right)\times 100=\left(\frac{\tilde{\theta}_{ji}^{g}(H)-\tilde{\theta}_{ij}^{g}(H)}{N}\right)\times 100 \tag{7}$$

The net pairwise volatility spillover between markets *i* and *j* is the difference between the gross volatility shocks transmitted from market *i* to market *j* and those transmitted from market *j* to market *i*.

4. Spillover Indices for Main Global Financial Market Segments

In this part of the paper, volatility spillover indices are presented and analysed for important global market segments: the equity market, bond market, CDS market, and FX market.[2]

Figure 1 represents the volatility spillover index methodology applied to 45 countries' stock market index returns for the period 8th June 2004 to 17th August 2018.

[2] The calculation of all spillover indices presented is based on generalised variance decompositions (with a 10-day forecast horizon) from a VAR(3) model.

Fig. 1 Global stock markets – volatility spillover index
Source: Author's presentation based on data from Diebold-Yilmaz database, http://financialconnectedness.org/research.html

Global equity volatility spillover index movement for the analysed period indicates significant changes in volatility spillover dynamics, with a profound increase in the three crisis sub-periods: the global financial crisis, the debt crisis in the eurozone, and Brexit. The increase in volatility spillovers in the crisis periods to over 80 index points confirms the shock effects that have already happened in the global stock market and provides a basis for using the spillover index as a warning signal of the upcoming crisis episodes.

Figure 2 represents volatility spillover index methodology applied to 10-year government bond return volatilities in 12 major economies over the period 8th August 2000 to 16th May 2018.

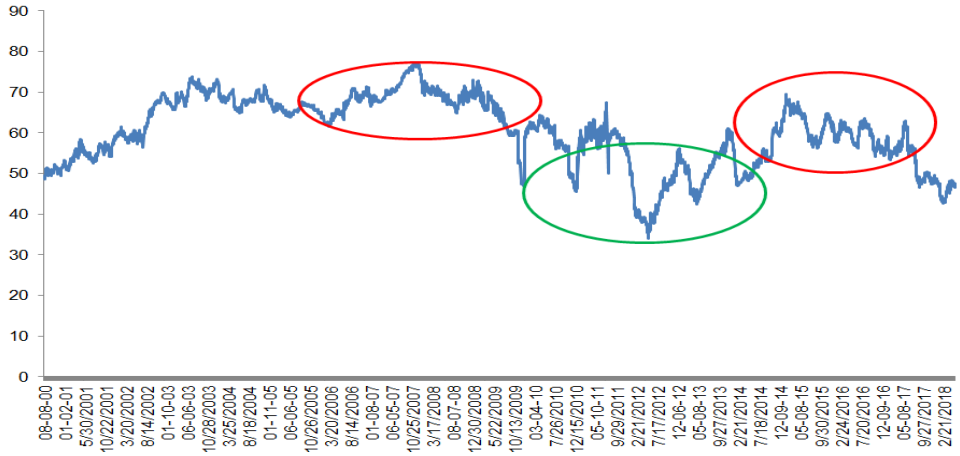

Fig. 2 Bond markets – volatility spillover index
Source: Author's presentation based on data from Diebold-Yilmaz database, http://financialconnectedness.org/research.html

The volatility spillover index for bonds markets shows an expected increase in the 2007–2008 crisis period, but less than for the stock market. Interestingly, in the sovereign debt crisis in the eurozone the volatility spillover index in bond markets increased initially, and then soon after 2011 decreased to a historically low level. This may be explained by the fact that the monetary policy in the eurozone changed significantly after the crisis started and its expansionary orientation reduced interest rates to an extremely low level, even into the negative zone for the strongest economies. Thus, the initial spillover of shocks was stopped.

Figure 3 represents volatility spillover index methodology applied to return volatilities of the USD exchange rate against 28 currencies over the period 13th October 2000 to 17th August 2018.

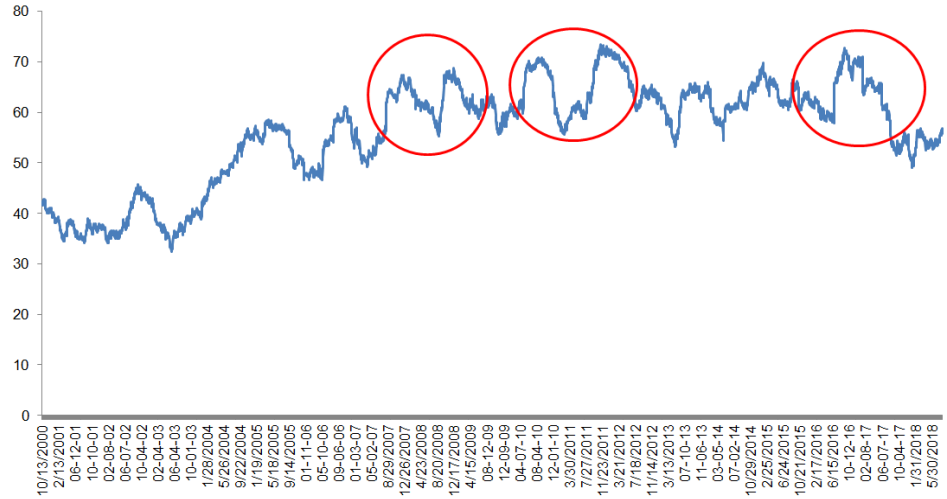

Fig. 3 FX markets – volatility spillover index
Source: Author's presentation based on data from Diebold-Yilmaz database, http://financialconnectedness.org/research.html

During the previously considered three crisis periods the total volatility spillover index for the FX market showed a similar pattern to the equity volatility behaviour, indicating significant changes in the volatility spillover dynamics, which again reached maximum levels in the crisis periods.

Figure 4 represents volatility spillover index methodology applied to the credit default swap returns for 5-year government bonds in 26 countries over the period from 1st September 2009 to 22th December 2017.

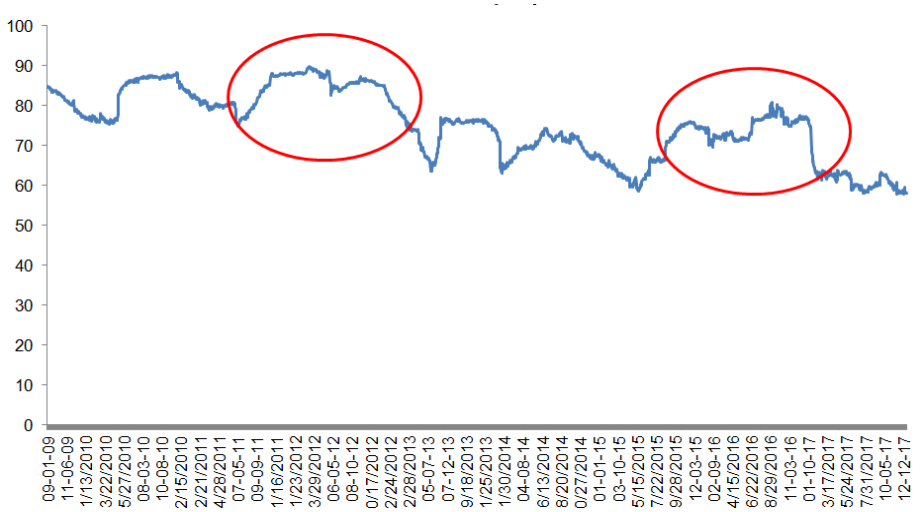

Fig. 4 CDS markets – volatility spillover index
Source: Author's presentation based on data from Diebold-Yilmaz database, http://financialconnectedness.org/research.html

The CDS spreads volatility index has the highest level of all four investigated asset classes, with the strongest increases during the eurozone crisis and Brexit. The increases in the index show a rising spillover of volatility shocks and default risk, with a possible contagion effect among markets.

The next table summarises volatility spillover indicators by providing minimum, maximum, and average values of the index for the presented periods and asset classes. The maximum spillover index is recorded for the CDS and equity markets, followed by the bond and FX markets.

Table 1 Comparative analysis of volatility spillover for main global market segments

	Min	Max	Average
Stock market	41.26	80.98	62.76
Bond market	33.96	77.05	60.21
FX market	32.33	73.46	56.20
CDS market	57.75	89.88	**75.22**

Source: Author's calculation based on data from Diebold-Yilmaz database, http://financialconnectedness.org/research.html

When referring to the dataset indicating volatility shock spillover from all other markets to a particular market, the countries whose markets receive most volatility shocks from others in times of distress include France, the Netherlands, Germany, Belgium, Italy, the UK, and Spain, followed by other developed and more open countries in economic and financial terms. At the bottom of the list are mostly developing and less integrated countries (Fig. 5).

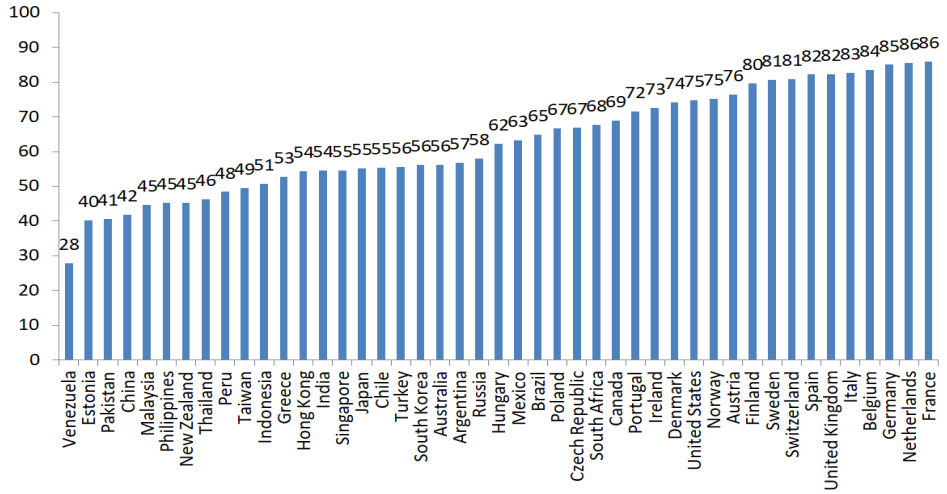

Fig. 5 Average directional volatility spillover from all other stock markets to a particular market
Source: Author's calculation and presentation based on data from Diebold-Yilmaz database, http://financialconnectedness.org/research.html

A similar result is found for the second directional spillover measure, indicating the spillover from a particular market to all other markets. More developed and integrated markets face greater spillover effects, especially in times of crisis when contagion effects are pronounced (Fig. 6).

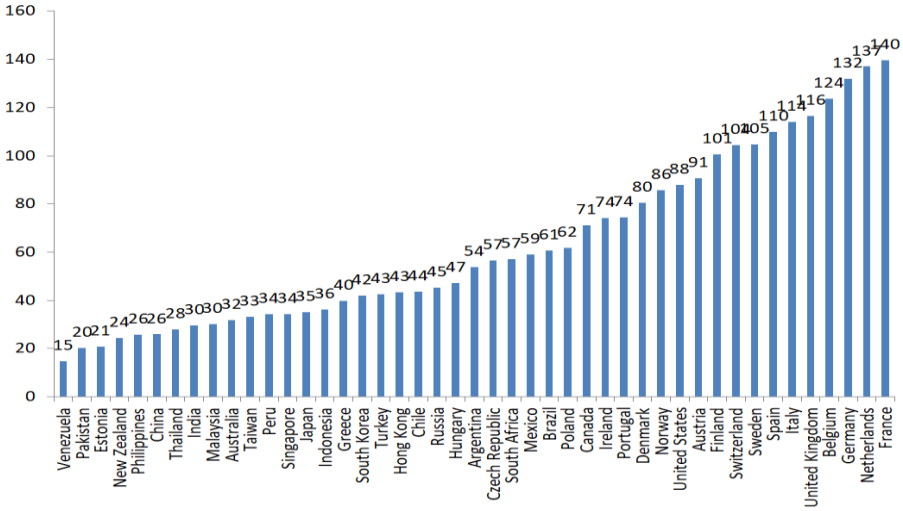

Fig. 6 Average directional volatility spillover to other stock markets from a particular market
Source: Author's calculation and presentation based on data from Diebold-Yilmaz database, http://financialconnectedness.org/research.html

The following chart presents the net directional volatility spillover index across different markets. Positive values of the index indicate countries where volatility spillover is initiated. A negative value of the index indicates when a country is the net receiver of shocks.

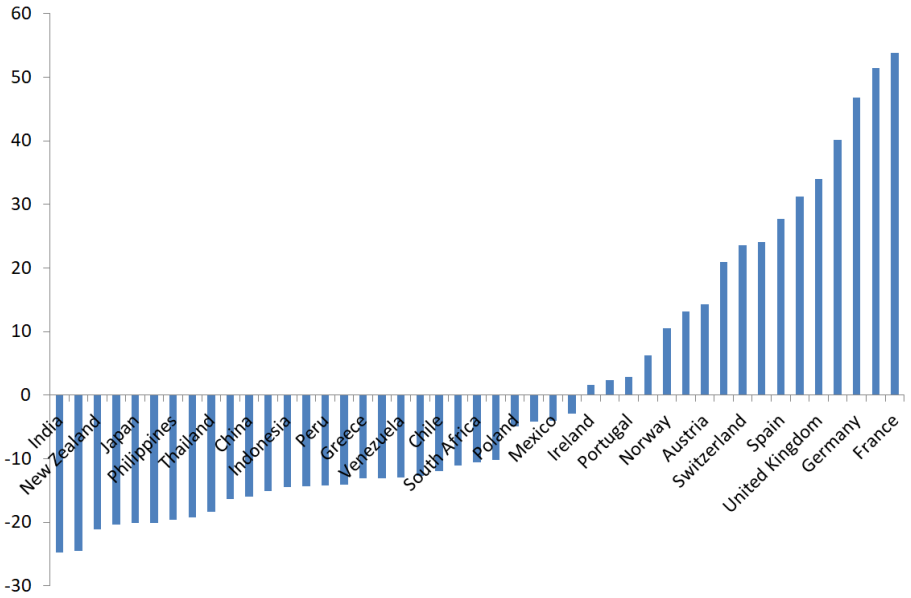

Fig. 7 Average net directional volatility spillover across markets
Source: Author's calculation and presentation based on data from Diebold-Yilmaz database, http://financialconnectedness.org/research.html

From this illustration it is obvious that more integrated countries in economic, trade, and financial terms are net transmitters of shocks, while less integrated, developed, and developing countries are net receivers.

4. CONCLUSION

The aim of the paper was to analyse volatility spillovers. Total, net, and directional volatility spillover measures were presented and analysed for four main global financial market segments – stocks, bonds, FX, and CDS. The analysis indicates that spillovers were strongest during distress periods – the global and sovereign debt crisis and Brexit. The transmission of the shocks was most pronounced in the CDS market, followed by equities, bonds, and FX. Directional and net directional measures indicate that developed and more open and connected countries are predominant transmitters of shocks, while less developed and less integrated markets are net receivers of volatility spillovers and potential contagion. In addition, adequate preventive and in-time economic policy actions are able to stop or mitigate volatility shock transmission and negative network contagion effects.

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http://financialconnectedness.org/research.html

EFEKTI PRELIVANJA VOLATILNOSTI NA NAJVEĆIM SEGMENTIMA GLOBALNOG FINANSIJSKOG TRŽIŠTA

Cilj ovoga rada jeste predstavljanje i analiza mera finansijske povezanosti i prelivanja volatilnosti na važnim segmentima globalnog finansijskog tržišta – tržištu akcija, tržištu obveznica, CDS tržištu i deviznom tržištu. Prezentovane su i analizirane ukupna, neto i mera koja pokazuje smer prelivanja volatilnosti ukazujući na nivo povezanosti konkretnog tržišnog segmenta među zemljama kao i na nivo prelivanja volatilnosti u kriznim nasuprot stabilnim periodima.

Ključne reči: *finansijska povezanost, opšti VAR, prelivanja volatilnosti, segmenti globalnog finansijskog tržišta*

FACTA UNIVERSITATIS
Series: **Economics and Organization** Vol. 15, N° 4, 2018, pp. 331 - 348
https://doi.org/10.22190/FUEO1804331S

Original Scientific Paper

MARKETING CULTURE IN FINANCIAL SERVICES WITH SPECIFIC REFERENCE TO RETAIL BANKING IN INDIA

UDC 658.8:336(540)

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Abstract. *Service industry is fast becoming the key to a nation's success and its importance in the world economy is tremendous. In India too, the service industry boom has powered the growth of the economy. Service industry is different and hence poses special management challenges. There are some unusual variables that affect the performance of these organizations. The 'marketing culture' of the organization is one such factor. The paper relates to it in the context of the banking sector in India. Post liberalization, the banking industry became highly competitive as the number of banking institutions increased multifold. Currently there are 87 banks in India (21 public sector banks, 21 private sector banks, and 45 foreign financial intermediaries and Banks) competing with each other. It has also been observed that one of the variables on the basis of which the banks compete is providing superior customer contacts, which is possible through customer centric employees and the marketing culture that exist in the banking organization. Marketing culture refers to the pattern of shared values and beliefs that help individuals understand the marketing function and provide them with norms for behavior in the firm. The orientation and culture towards marketing within the organization is the highest imperative.*

The paper is based on primary research being undertaken on three banks selected from each category mentioned above. A questionnaire was developed with the help of which the marketing culture of a service firm was assessed. The questionnaire uses 34 items measuring six dimensions of marketing culture, as identified by leading researchers. These six dimensions are service quality, internal communication, innovativeness, organization, inter-personal relationships and selling tasks. The paper has used parametric approach to analyze and understand the attitude of the employees of each of the banks towards the dimensions identified. The inter-relationships among the six dimensions for each of the banks have also been studied. Weights have been assigned to the six dimensions and the responses have been assessed accordingly. The results of

Received July 27, 2018 / Accepted September 7, 2018
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the analysis clearly show the foreign banks score the highest on the IMC index and the nationalized banks the lowest.

Key words: *marketing culture, service quality, internal communication, innovativeness, inter-personal relationships and selling tasks*

JEL Classification: M31, G21

INTRODUCTION

The review of classical marketing concepts to contemporary marketing theories clarifies the misunderstandings regarding marketing. The confusion about marketing gets complex if you look at the variety of definitions of marketing where each one relates to a limited scope of marketing and gives a holistic view of complete marketing function. Marketing has a deep rooted meaning which goes beyond the 4 Ps, advertising and selling products. In essence, marketing is a way of organizing the activities of the enterprise that includes the tools and techniques for identifying, anticipating and satisfying customer requirements, maintaining marketing orientation and organizational culture etc. Therefore, in this chapter an attempt is made to segregate the selected definitions of marketing so as to arrive at a clearer understanding of marketing which will be useful as the background to explore the status and relevance of the marketing culture in the service sector.

1. UNDERSTANDING MARKETING

1.1. Marketing as a process

Marketing as a phenomenon can be looked upon through various approaches. Marketing has been described differently as, a philosophy, an orientation and a whole set of culture. In the academic establishment in 1985, the American Marketing Association (AMA) redefined marketing as "the process of planning and executing the conception, pricing, promotion and distribution of ideas, goods and services to create exchange and satisfy individual and organizational activities." (Lusch, 2007, p. 264). This definition suggests that the marketing process relates to planning and executing the conception, pricing, distribution and promotion of goods, services and ideas but the scope of marketing is restricted to 4Ps. Recognizing the shifts, the American Marketing Association (2004) redefined marketing as an organizational function and a set of processes for creating, communicating and delivering value to customers and for managing customer relationships in ways that benefit the organization and its stakeholders (Gundlach, 2007). And as approved by the same association in 2013, "Marketing is the activity, set of institutions, and processes for creating, communicating, delivering, and exchanging offerings that have value for customers, clients, partners and society at large" (AMA, 2013). The latter definition is the modernization of the previous one which does not take into consideration what the customer would want marketing to be.

1.2. Marketing as a philosophy

The marketing concept as an essential philosophy directing marketing in practice still prevails. M.J. Baker introduced marketing as a business philosophy. According to Baker (1974), marketing requires the firm to do what it has always set out to do - combine the resources at its disposal in the manner which will enable it to achieve its long run profit goals. This definition suggests that marketing is not an activity but it is a cognitive way of thinking or a state of mind of doing business and a firm should base all its activities on the needs and wants of customers in the selected target segments or markets.

In order to fully operationalize the marketing philosophy of business, Anderson suggested that 'marketing' must negotiate with top management and the other functional areas to implement its strategies. This coalition perspective suggests that marketing must take an active role in promoting its strategic options by demonstrating the survival value of the consumer orientation to other internal coalitions to have coordinated approaches for making the most effective use of the resources and the budgets. Kotler (2003) identified six alternative philosophies for an organization to conduct business according to their orientation about going to marketplace and doing marketing activities, which are production concept, product concept, selling concept, marketing concept, societal marketing concept which states that the philosophy is that an organization must determine the needs and wants of the target markets and create, communicate and deliver more effectively and efficiently in a way that maintains and improves the well-being of the society and the consumers in that society. To express such a concept or philosophy, Paul Mazur (1947) defined marketing as "the delivery of a standard of living" and Total Marketing which is a recent buzzword combining customer orientation, relationship marketing, CRM etc.

This itself is or may lead to a market-oriented view where an organization's activities are geared to the processes of product, technology and production which already exist and it is entirely different from the production concept (Grönroos, 1989).

1.3. Marketing as an orientation

Kotler (2003) has also described numerous changes in the business orientation over time. While a strong association between marketing orientation development and company performance has been established, the understanding of the marketing orientation remains unclear since some studies have suggested a philosophical nature for marketing orientation and other studies have concluded that marketing orientation represents a behavioral notion. Exploitation of only a very few companies can ascertain the indulgence in the implication of marketing orientation whereas a big chunk of mainstream companies normally fail to create and make use of the marketing orientation concept (Hooley et al., 1990). "Market orientation" (or market-oriented behavior) is a popular term used by marketing practitioners as an indicator of the extent to which an organization implements the "marketing concept" (Jaworski & Kohli, 1993). Gronroos (1989, pp. 52-60) proposed his definition of marketing according to the customer's view of the marketing function, and suggested that marketing is to establish develop and commercialize long-term customer relationships, so that the objectives of the parties involved are met. This is done by mutual exchange and keeping in mind the needs of customers. Thus, marketing as an orientation focuses on the customer orientation and planning which has the customer at the focal point and each department of any organization shall work for.

2. THE MARKETING CULTURE

The construct of market orientation is believed to be a result of the implementation of the marketing concept (Kohli & Jaworski, 1990; Narver & Slater, 1990). Sometimes the behavioural point of view (Kirca et al., 2005) and cultural perspective, the other times, (Homburg & Pflesser, 2000) are reflected with regard to this. Although some studies considered market orientation as a facet of organizational culture (Homburg & Pflesser, 2000), or as a culture within the firm (Deshpande & Webster, 1989; Narver and Slater, 1990), some researchers observed it as an altogether different construct (Farley et al., 2008). Strategic development of a customer orientation within firms is one of the growing concerns interrogating its linkage with organizational culture. Thus, in the past few years, a few researchers have begun an analysis of the relationship between the culture of organization and the marketing of services (Parasuraman, 1987) giving rise to the concept of marketing culture.

Scholars have begun to recognize the importance of organizational culture in the management of the marketing function. Growing concern for issues of implementation in marketing strategy and the development of a customer orientation within organizations is also raising questions specifically to the organizational culture. When behavioural actions of organisational members unite, it forms a culture in the workplace (Gregory, 1983). Marketing culture provides unwritten policies and guidelines to employees and behavioral norms for conduct within an organization and portray the same in its interaction with the other parties viz. customers, government, etc. It constitutes that part of a firm's overall culture which refers to the pattern of shared values and beliefs to help employees understand and "feel" the marketing function and consequently execute efficient marketing activities. The validation of certain "do's and don'ts" can be done on the grounds of an established culture (Harrison, 1972). In other words, the marketing culture of a service firm refers to the way marketing "things" are being undertaken by the service employees. There are enough examples where we can compare the marketing culture of a Government sector hospital and a private sector hospital, or airlines or a bank.

2.1. Internal marketing culture as a part of organizational culture

Despite of the thin empirical literature of culture, the same is conceptualized by various studies (Beyer & Trite, 1987; Kilmann & Saxton, 1983; Thompson & Wildavsky, 1986). Lately, the academicians and marketers have been paying huge attention to the significance of a firm's marketing culture (Parasuraman, 1987; Schneider & Bowen, 1985). Many popular scholarly studies like Deal & Kennedy, 1982; Peters & Waterman, 1982; Schein, 1985 contain researches related to the construct of culture, or more specifically, organization culture in the years gone by.

It was in the year 1976 that the concept of Internal Marketing culture was first proposed as a necessity and a pre-requisite for providing satisfactory and high quality services by Berry et al. (1976); Berry, 1984. Since 1980, the study of organizational culture is considered to be "one of the most fascinating and yet elusive topics for management researchers" (Harris & Ogbonna, 2002, p. 31). O'Reilly (1989) is of the opinion that when employees' expectations and customers' requirement fit well in an organization, there exists an organizational culture. It has been defined as "the pattern of shared values and beliefs that help individuals understand organizational functioning and thus provide them with norms for behaviour in the organization" (Deshpande & Webster, 1989, p. 4). Thus organizational culture focuses attention on informal,

hidden forces within a firm – forces that exert tremendous influence on the behavior and productivity of its employees, perhaps more so than formal, written policies or guidelines.

Webster (1993) has recently described marketing culture as a comprehensive construct made up of varied facets which involves the significance of service quality, interpersonal relationships, the selling task, organization, internal communications, and innovativeness. Thus, marketing culture is one that concentrates on implementing the most recent innovations relevant to that particular industry. Yet, another might focus on the continuous monitoring and improving of the quality of established practices. Implication of a strong marketing culture and the decision regarding establishment of its extent (i.e. to upgrade service quality, to innovate, etc.) should be evaluated on the basis of various factors like probable return.

2.2. Corporate culture and organizational performance

This has been understood that human element has a significant influence on the successful execution of marketing plans, since their formulation and implementation depend on individuals in the firm. So there exists something which is helpful in attaining a better performance for an organization that is referred to as organizational culture. Marketing as organizational culture emphasizes the understanding of the values and beliefs of the employees and developing a marketing culture, which creates the behavior of employees providing superior value to the customers and enables attaining excellent business performance. Culture is the significant solution when it comes to the decision of strategic direction of firms (Smircich, 1983). A new challenge to service marketers is cultivating and sustaining a service culture which correlates marketing culture and successful marketing of services positively (Berry, L.L. et al., 1989). Many researchers have attempted to find a connection between the adoption rate of marketing orientation and company performance (e.g. Narver & Slater, 1990; Cadogan & Diamantopoulos, 1995; Anttila et al., 1995) but the understanding of marketing orientation is still not clear.

The concept of marketing effectiveness has also been extensively discussed because of its strong association with many valuable organizational outcomes, such as stable, long-term growth, enhanced customer satisfaction, a competitive advantage, and a strong marketing orientation (Kotler, 1977; Norborn et al., 1990). The corporate literature indicates positive linkage between market orientation and performance of service delivered (Jaworski & Kohli, 1993, p. 96; Slater & Narver, 1994, p. 95; 2000). As the external and social environment is crucial to the working of a firm, culture also has a direct impact on its productivity (Schneider & Reichers, 1983).

Thus, the underlying principle behind studying marketing culture and orientation is that it can affect the commitment and performance of an organization (Lok & Crawford, 2004). This industry-specific research attempts to assess and measure the marketing culture within the retail banking industry in India, and to provide top management of these banks with the suggestions which may be required for improving the banks' selling effectiveness with proper marketing orientation. The reasons for choosing this sector and the three banks in particular have been discussed in detail in the report. The paper further gives an elaborative literature on the marketing culture in the banking sector.

3. Marketing Culture in Service Sector

Due to the unique and 'handle with care' characteristics of services (i.e. intangibility, inseparability of production and consumption, perishability, and variability), the nature of the culture of a service firm is particularly significant requiring specific attention for better performance (Webster, 1995). Thus, marketing is not only a part of some dedicated department for the marketing activities, but rather staff and support functions are an elementary part of it. In most of the organizations, employees have something to do with marketing especially when they come in direct contact with the representatives of customers (Gummesson, 1987) like in the banking sector.

3.1. Banking sector evolution in India

The banking history in India has undergone a long journey and also achieved a new stature with the dynamic timeframe where banking practices have shifted from traditional Britishers' era to the reforms period, nationalization to privatization of banks and the arrival of foreign banks to India.

Post the recent set of reforms such as demonetization, various industries in India, especially the banking industry, are ripe with challenges and changes. One of the major challenges that the Indian banking industry has been facing is minimizing the inconvenience caused to the end customers. The role of the employees in banking services is considered very crucial for production as well as delivery of the service. Generally, these services are made and sold at the same time, where customers also participate simultaneously in the process. Another reason explaining the significant role of employees is that the services of banks are of standardized nature through which customers can get basic services from all banks (O'Reilly, 2003). Customers' needs are ever changing, they demand higher level of services. Here lies the competition and the marketing culture can be used as a differentiating tool. That is the reason banks are changing their ways of dealing with their clients from a transaction focus to a relationship focus strategy with the aim of long-term customer retention through more enduring relationships. This requires employees who are highly qualified, motivated, and empowered (Zeithaml et al., 2006).

Effective interactions between employees and customers mean that both parties have a strong impact on the service performance (Luk, 1997). Service quality is implicitly considered as a component of the interactions between employee-customer (Parasuraman et al., 1988). This trait must be incorporated in the sales culture of the banks. The reports of National Skill Development Corporation of India and the McKinsey and Company (2010) exhibit the importance of human resources as the important success factor for Indian banks (Maji & Hazarika, 2016).

The Indian banking industry has changed dramatically over the years. A huge growth in savings due to the rising income levels is a major factor affecting the banking sector. The access to banking services has also improved over time due to untiring government efforts to encourage technology in banking and increase expansion in unbanked and non-metropolitan regions. In recent years, the Indian banking industry has witnessed the introduction of innovative banking models like payments and small finance banks. The digital payments system in India has evolved the most with India's Immediate Payment Service (IMPS) being the only system at level 5 in the Faster Payments Innovation Index (FPII).

3.2. Competition in Indian banks

Throughout the world, the banking industry is going through the fast paced environment where banks have to be competitive and resourceful for their very existence (Devlin & Ennew, 1997). As the savings of society are taken care of by the banking sector, it is predominantly significant to have competition amongst banks. Also, banking competition aids the growth of national economy by managing cost inefficiencies and welfare gains (Jayaratne & Strahan, 1996). Regulatory Authorities encourage banking competition, and central banks take necessary actions to enhance the economic conditions of nation by altering competitive levels time to time (Kapsis, 2012). Also, such competition leads to a reduction in operating costs and, hence, eradicating inefficiencies in the banking industry.

With the outset of the banking sector reforms in India post 1991, the relationship between competition and efficiency in the Indian banking sector is crucial as well as feasible to investigate in Indian markets (Arrawatia et al., 2015). Literature draws attention towards the increased competition in the banking sector during the last decade (Arrawatia & Misra, 2012, Maji & Hazarika, 2018). The advent of banking reforms represented Indian banks, especially public sector banks (PSBs), to the rigorous domestic and international competition. In the fierce competitive environment, the survival of Indian banks particularly PSBs has become critical because only the efficient banks with favorable culture can withstand the external forces and maintain decent market share (Kumar & Gulati, 2008).

3.3. Current position of public sector banks

The three segments of banks' ownership in India viz. public sector banks, private sector banks, and foreign banks have diversified cultures, regulations, operating conditions.

PSBs in India have a vast spread country-wide accounting for almost 80 per cent of the total banking business share (CAFRAL, 2014). Their role in India's economic and social development is massive and well accepted. They have strong presence at rural and semi-urban areas and provide employment at large scale. In contrast, private sector banks are less labor-intensive with limited number of branches. But adoption of modern technology and the customer-oriented approach make them more profitable. On the other hand, foreign banks are equipped with even better technology, and risk management skills limiting their operations in major urban centers (Kumar & Gulati, 2008). All this has changed the competitive landscape and banking practices of the Indian banking sector ultimately declining the market share of PSBs in terms of total assets, investments, advances, deposits of the Indian banking industry (Mohan et.al, 2005; Mohan, 2005).

In spite of the whole scenario, PSBs still act as catalysts for socio-economic growth in the country which makes them dominating players in the Indian banking sector, although their market share has decreased in the deregulatory establishment making policy makers concerned about the retention of their position.

3.3. Perception of banks

A survey was carried out by Rediffusion Y&R in 2014 where a sample of 4000 chief wage earners was taken. The Survey was aimed at the perceptions the chief wage earners had about the three categories of banking institutions which helped in their positioning.

The survey did not cover Co-operative and rural banks. The findings were quite revealing as there were very clear demarcations. The public sector banks were considered as rich in heritage, authentic, traditional and socially responsible. Private sector banks were seen as chic, stylish, trendy, customer-centric and more approachable. Other multi-national foreign banks were perceived as high performance, up-to-date, progressive and caring more for money than for customers.

4. RESEARCH OBJECTIVES

This paper aims to provide insight into the marketing culture in the Indian banking industry with reference to internal marketing across the private sector, public sector and foreign banks. It intends to identify the various constituents, dimensions and parameters of Internal marketing in services sector organizations. This paper further intends to give suggestions for improvement of marketing culture in the banks.

5. METHODOLOGY

5.1. Research settings

Retail banking industry in India has been selected for the purpose of the research. Following the recent set of reforms such as demonetization, various industries in India, especially the banking industry are ripe with challenges and changes. The role of marketing in financial services industry in general and retail banking in particular is immense and growing and hence an orientation and culture towards marketing within the organization is the highest imperative. With 87 banks competing in a relatively limited and almost saturated market, commercial banks' competitiveness is based on their abilities to provide customers with high quality of service. Thus, banks have to build a strong sales culture among their employees and improve the quality of their services including customer services. Within the industry three kinds of banks have been chosen using the convenience sampling viz. foreign banks operating in India, Indian private banks and Indian public sector banks.

The three banks selected belong to different categories of the industry having different set of customer profiles and success patterns in the past. Commercial banks in India have a vital role in the socio-economic development process.

5.2. Sample design

A sample of 150 employees and managers was involved in the survey. A structured and self-administered survey in the form of a detailed questionnaire was used, targeting managers and employees of the chosen banks operating in India to assess their marketing culture. A parametric approach was applied on the responses and the data set was checked with normality and descriptive data analysis. The Marketing Culture Index was devised using the Weighted Average Method.

5.3. Measurement scales

The majority of scales used to measure the constructs were drawn from Karatepe et al. (2005) in the field with fewer adaptations to a financial organizational context.

6. Analysis and Interpretation

6.1. Marketing culture assessment

A leading researcher has designed a paradigm for developing measures of marketing constructs. A questionnaire has been developed with the help of which the marketing culture of a service firm can be assessed. This questionnaire makes use of 34 items measuring six dimensions of marketing culture, as identified by leading researchers. The six dimensions used to assess the marketing culture of service firms are:

- **Service Quality**: This shall involve the assessment of exceptional service; commitment of top management to providing quality service; systematic, regular measurement and monitoring of employees' performance; employees' focus on customer needs, desires and attitudes; the belief of the employees that their behavior reflects the firm's; the ability of the employees to meet the firm's expectations; employee's communication skills; employees' attention to detail in their work.
- **Internal Communication**: This shall involve the assessment of the firm having an approved set of policies and procedures which is made available to every employee; that supervisors clearly state their expectations; that each employee understands the mission and general objectives of the firm; the encouragement of front-line service personnel to become involved in standard setting; the firm focusing efforts on training and motivating employees.
- **Innovativeness**: This shall involve the assessment of the employees to be receptive to ideas for change; the firm keeping up with technological advances; the receptiveness of the company to change.
- **Organization**: This shall involve the assessment of each employee to be well organized; for careful planning to be each employee's daily routine; for employees to prioritize work; for employees' work area to be well organized; each employee to manage time well.
- **Interpersonal Relationships**: This shall involve the assessment of the company to be considerate of employee's feelings; for the firm to treat each employee as an important part of the organization; for employees to feel comfortable in giving opinions to higher management; that managers/supervisors have an "open-door" policy; management's interaction with front-line employees.
- **Selling Task**: This shall involve the assessment of the firm's emphasis on hiring the right people; the firm providing skill-based training and product knowledge to front-line service providers; the encouragement of creative approaches to selling; the firm's recognition of high achievers in selling; employees to enjoy pursuing new accounts; the firm to reward employees; better than competing firms, with incentives to sell; employees to aggressively pursue new business.

For assessing each of these six dimensions there are some questions, which need to be probed. The response to these questions in the questionnaire is recorded on a six-point scale,

consisting of the options: Necessary (6), Very Important (5), Important (4), Somewhat Important (3), Of Little Importance (2), No Importance (1).

This six point scale relates either to the importance of the item or the extent to which the firm possesses that attribute. 150 employees of the three banks (50 employees of each of the three banks) were asked to respond to the above questionnaire.

6.1.1. Analysis of marketing culture

It is very important to analyze which aspects of Marketing Culture are particularly strong in a bank and which aspects need specific improvement. 6 dimensions have been used to assess the culture of a bank. Each of these 6 dimensions is measured by some variables the number of which varies.

Table 1 Number of variables under each dimensions of marketing culture

Dimension	No. of variables
I Service Quality	8
II Internal Communication	6
III Innovativeness	3
IV Organization	5
V Interpersonal Relationships	5
VI Selling Task	7
TOTAL	34

Source: Osman M. Karatepe et al. (2005)

6.1.2. Comparison among banks

The responses to the questionnaire were measured on a scale of 1 to 6 ranging from 'not important' to 'necessary'. The score for each variable under a particular dimension was added to get the total for each dimension for each respondent. These figures were then added to get the total score by all respondents for each of the 6 dimensions. The total score for each dimension was then divided by the number of respondents to arrive at the average score for each dimension. This average score cannot be used for inter-dimension comparison in a bank (because of the different number of variables used to assess each dimension), but can definitely be used to compare the banks with respect to each dimension.

Table 2 Comparison on marketing culture variable of three categories of banks

	Foreign banks	Private sector banks	Public sector banks
Service quality	36.76	28.60	17.80
Internal communication	28.80	20.20	15.88
Innovativeness	22.36	13.12	8.52
Organization	26.28	17.12	14.48
Interpersonal relationships	26.32	15.48	16.96
Selling task	31.28	23.04	20.00

6.1.3. Comparison among dimensions

The average scores and their method of calculation have been mentioned clearly in the paragraph above. Subsequently, these average scores were divided by the number of variables that were used to assess the respective dimensions (mentioned at the beginning of this chapter). This brings out the figure for 'average score per variable' for each of the dimensions. These figures can be used to compare each dimension within a bank. The process has been repeated for all the banks separately.

Table 3 Average score of foreign banks on six variables

	Average score per variable	RANK
Service quality	4.595	V
Internal communication	4.800	IV
Innovativeness	5.453	I
Organization	5.256	III
Interpersonal relationships	5.264	II
Selling task	4.469	VI

Table 4 Average score of private banks on six variables

	Average score per variable	RANK
Service quality	3.575	II
Internal communication	3.367	IV
Innovativeness	4.373	I
Organization	3.424	III
Interpersonal relationships	3.096	VI
Selling task	3.291	V

Table 5 Average score of public sector banks on six variables

	Average score per variable	RANK
Service quality	2.225	VI
Internal communication	2.647	V
Innovativeness	2.840	IV
Organization	2.896	II
Interpersonal relationships	3.392	I
Selling task	2.857	III

6.2. Marketing culture assessment

The marketing cultures of private sector banks and public sector banks have been assessed through the analysis of data collected through the questionnaire. However, to get a better comparison of the marketing cultures of the two banks, an index has been developed to numerically assess the six dimensions measuring the marketing culture.

The dimensions have been given a score between 1 and 6 with 1 being the lowest and 6 being the highest. The scores for each dimension given by the respondents were averaged to get a composite score for each dimension, to be used as weights for the 6 dimensions.

The weights assigned are as follows:

	I	II	III	IV	V	VI
Weight	4.92	3.31	3.88	3.56	4.15	4.57

MCI for the two banks is calculated as shown below.

Table 6 MCI – foreign banks

	Average score	Weight	Weighted score
I	36.76	4.92	180.8592
II	28.80	3.31	95.3280
III	22.36	3.88	86.7568
IV	26.28	3.56	93.5568
V	26.32	4.15	109.2280
VI	31.28	4.57	142.9496
Total		24.39	708.6784

Weighted average = 708.6784/24.39 = **29.06**

Table 7 MCI – private sector banks

	Average score	Weight	Weighted score
I	28.60	4.92	140.7120
II	20.20	3.31	66.8620
III	13.12	3.88	50.9056
IV	17.12	3.56	60.9472
V	15.48	4.15	64.2420
VI	23.04	4.57	105.2928
Total		24.39	488.9616

Weighted average = 488.9616/24.39 **= 20.05**

Table 8 MCI – public sector banks

	Average score	Weight	Weighted score
I	17.80	4.92	87.5760
II	15.88	3.31	52.5628
III	8.52	3.88	33.0576
IV	14.48	3.56	51.5488
V	16.96	4.15	70.3840
VI	20.00	4.57	91.4000
Total		24.39	386.5292

Weighted average = 386.5292/24.39 **= 15.85**

FINDINGS

The results of the above analysis show that foreign banks score the highest across all six dimensions. This bank is the leader in 'marketing culture' among the three banks surveyed by a huge margin. Private sector banks follow foreign banks keenly and manage to score more than public sector banks in five out of the six dimensions. The only exception where public sector banks have a score greater than private sector banks are in terms of 'interpersonal relationships'. This reflects that public sector banks' employees consider the feeling of organization treating each employee as more important. The results of comparison of the dimensions for public sector banks are different from the other two banks. The most important dimension rated by public sector banks' respondents is 'interpersonal relationships'. 'Organization' and 'selling task', which are very close to one another, follow interpersonal relationships as highly rated dimensions among the respondents. 'Service quality' has been rated the lowest by public sector banks' respondents. For private sector banks' respondents 'innovativeness' has also emerged as the most important aspect among the six dimensions measuring marketing culture. However, this is followed by 'service quality', which the respondents have found to be as crucial for the success of the bank. 'Organization', 'interpersonal relationships', 'selling task' and 'internal communications' follow the above trends and are all close to each other in terms of significance given by the respondents. Among foreign banks' respondents 'innovativeness' is rated very high showing the attitude of the employees as being fresh and open to ideas of change. This is followed by 'organization' and 'interpersonal relationships', which are considered as more or less equally important.

Thus, the empirical findings upon the seven dimensions of marketing culture indicated that the overall employees' perception of the sales culture in the surveyed banks is moderate. However, the sales culture in the non-Indian banks is stronger than that in the Indian banks. Foreign banks are found to be the leader in terms of 'marketing culture'. They are competitively followed by private sector banks. Three kinds of marketing cultures were found: the strong (the high flyers); the medium (the brisk runners); and the weak (the slow walkers).

LIMITATIONS

The number of respondents for each category of the banks is 50 in total. The sample size if increased will add more credibility to the results and can bring out fresher insights. Only three banks have been selected for this research, belonging to different categories in the banking industry in India. A higher number of banks can be chosen to better understand the marketing culture in the industry. The respondents for each bank are from two or three branches of the banks in Delhi. A wider distribution of the respondents from different branches and different geographical regions of the country can help in assessing differences in culture among various regional divides.

CONCLUSION

On a basic level, human systems need some "glue", some central theme or themes around which behavior can coalesce. In the absence of such a thematic element, employees

cannot know when, toward what, and how to direct their energies. Organizational culture provides this thematic coherence.

The culture of a firm has been found to be important in many other ways. For example, some researchers mention its importance as a form of control of participants. It also might be a critical key used by strategic managers to direct the course of their organizations. Some researchers feel that a firm's culture has as much or more influence on corporate effectiveness as the formal structure of jobs, authority, and technical and financial procedures. Organizational culture affects employees' behavior, a firm's ability to meet their needs and demands, and the way the firm copes with the external environment. It establishes the rationale for "dos and don'ts" of behavior.

The quality of services which are offered to the banks' end customers is dependent on the quality of service provided in the bank's internal work environment. Moreover, the attitude and behavior of employees have a substantial effect on the quality of service provided to the customers. Thus, it has become imperative for top management to administer and rely on marketing culture and effectiveness indexes in their service provider firms. The paper reinforces the importance of sound marketing culture to the Indian banking Sector. The meaning and importance of organization culture, marketing culture and their relevance to firms in general and service firms in particular studied through review of previous researches and manifested empirically. This paper is the first of its kind to study marketing culture dynamics in the context of Indian retail banking industry. The empirical findings upon the seven dimensions of marketing culture indicated that the overall employees' perception of the sales culture in the surveyed banks is moderate. However, the sales culture in the non-Indian banks was stronger than that in the Indian banks.

RECOMMENDATIONS

The findings of the study have useful implications for policy formulation. Based on the analysis, the following suggestions can be made in order to thrive for a better marketing culture in the banks. Due to high customer interaction in this sector, it is very important for the employees of the bank to believe that their behavior reflects that of the bank. As the opinions formed by customers go a long way in making or breaking relationships, utmost care should be taken to ensure customers are totally satisfied. Employees work area premises should be well organized as an important part of the dimension 'organization'. The employees at foreign banks can do better in this regard. The commitment of top management to provide quality of service management's sharing of financial information with all employees will go a long way in motivating employees to do better, as they would be able to see and assess the results of their enhanced performance.

The executives involved in selling and other front line employees who interact with the customers in various roles are the core team for any bank. Hence it becomes all the more important to involve these front-line executives in standard setting for delivery of better service. The freedom of work and a healthy competitive environment go a long way in enhancing the performance of employees. Therefore, it is emphasized that supervisors have an open door policy. Directing efforts in this regard can help private sector banks scale new heights.

As far as public sector banks are concerned, systematic, regular measurement and monitoring of employees' performance should be stressed more as it would lead to a competitive environment where employees would definitely strive harder. Over the years, public sector banks enjoying monopoly, have dominated the banking industry but with the ushering in of stiff competition employees' behavior sets banks apart and ahead. For this it is required that the bank starts placing due importance on employees' communication skills. In the shifting paradigms, the bar is being constantly raised. Competition is immense and technology is the key differentiating factor. In such a scenario public sector banks need to be geared up to accept and adapt to changes in practices like development of work force, strong and relevant human resource policies, skill-based training and product knowledge to front-line service providers, etc. As mentioned above, the selling task at public sector banks needs a major revamp. The attitude of the bank is not aggressive. It waits for the customers to reach out to them. It should be fashioned the opposite way. The attitude of employees needs to be changed drastically in this respect. Encouragement of creative approaches to selling is dearly required. Working in a tough competitive environment, Indian banks should focus on enhancing operational efficiency for reducing risk, which ultimately enhances the stability in the banking system (Maji & Hazarika, 2014).

DIRECTIONS FOR FUTURE RESEARCH

Servqual (a research model for service quality research) is most valuable when it is used periodically to track service quality trends, and when it is used in conjunction with other forms of service quality measurement. One potential application of Servqual is to determine the relative importance of the five dimensions in influencing customers' overall quality perceptions. It can also help in assessing consumer expectations about and perception of service quality and pinpointing areas requiring managerial attention and actions to improve service quality. Thus, on the overall front of creating and sustaining a marketing culture, the most important aspect of Service Quality can be separately researched. A possible comparison of different or related service industries can also be undertaken, for example, comparison of the retail banking industry and insurance industry. Future studies could also look for the effect of each variable of marketing culture on the service quality of banking firms.

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MARKETINŠKA KULTURA I FINANSIJSKE USLUGE U KONTEKSTU RETAIL BANKARSTVA U INDIJI

Industrija usluga brzo postaje ključ uspeha nacije i njen značaj u svetskoj ekonomiji je ogroman. U Indiji takođe, nagli razvoj industrije usluga je podstakao rast ekonomije. Industrija usluga je drugačija i stoga postavlja posebne izazove upravljanja. Postoje neke neobične varijable koje utiču na performanse ovih organizacija. Marketinška kultura organizacije je jedan od takvih faktora. Rad se bavi ovom temom u kontekstu bankarskog sektora u Indiji. Nakon liberalizacije, bankarska industrija je postala visoko konkurentna jer se broj bankarskih institucija višestruko povećao. Trenutno u Indiji ima 87 banaka (21 banka u javnom vlasništvu, 21 banka u privatnom vlasništvu i 45 stranih finansijskih posrednika i banaka) koje su međusobna konkurencija. Takođe je primećeno da je jedna od varijabli u nadmetanju banaka ostvarivanje superiorne saradnje sa klijentima, što je moguće kroz zaposlene koji su usmereni na kupce i marketinšku kulturu koja postoji u bankarskoj organizaciji. Marketinška kultura se odnosi na obrazac zajedničkih vrednosti i uverenja koji pomažu pojedincima da razumeju ulogu marketinga i pruže im norme ponašanja u firmi. Marketinška orijentacija i kultura u okviru organizacije predstavljaju najviši imperativ.

Rad je zasnovan na primarnom istraživanju koje je obuhvatilo tri banke koje su odabrane iz svake od gore pomenutih kategorija. Izrađen je upitnik pomoću koga je procenjena marketinška kultura uslužnih banaka. Upitnik koristi 34 stavke kojima se meri šest dimenzija marketinške kulture koje su identifikovali vodeći istraživači. Ovih šest dimenzija čine kvalitet usluge, interna komunikacija, inovativnost, organizacija, međusobni odnosi i zadaci prodaje. U radu je korišćen parametarski pristup za analizu i razumevanje stava zaposlenih u svakoj od banaka po pitanju identifikovanih dimenzija. Takođe su proučavani međusobni odnosi ovih šest dimenzija za svaku od banaka. Svakoj od šest dimenzija je dodeljena težina i odgovori su ocenjeni u skladu sa tim. Rezultati analize jasno pokazuju da strane banke imaju najviši indeks marketinške kulture, a nacionalizovane banke najniži.

Ključne reči: *marketinška kultura, kvalitet usluga, interna komunikacija, inovativnost, međuljudski odnosi i zadaci prodaje*

FACTA UNIVERSITATIS
Series: **Economics and Organization** Vol. 15, N° 4, 2018, pp. 349 - 362
https://doi.org/10.22190/FUEO1804349P

Original Scientific Paper

THE ROLE OF INFORMATION TECHNOLOGY IN THE IMPLEMENTATION OF LEAN CONCEPT

UDC 004:005

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Abstract. *Achieving and strengthening competitive advantage represents the key factor for survival and success of the modern businesses. It is a fact that successful implementation of lean management leads to increased productivity and competence. However, in order to maintain profitability and business stability, it is necessary to support lean concept, which can be provided, above all, by the application of modern information technology. In that sense, by applying the ERP system, it is possible to adapt basic lean principles to the requirements of a modern environment characterized by constant change of demand and needs of the consumers/users. The main goal of the research is to examine the existing level of application of modern information technologies, as well as the level of attention paid to the integration of lean concept and software solutions in enterprises in the Republic of Serbia. Theoretical aspect of the research is related to finding appropriate grounds for making conclusions on the basis of the existing literature. In this paper, research gaps and proposed further research directions have been identified. By applying the appropriate statistical methods (descriptive statistics, cluster analysis, correlation analysis, χ2 test) it was finally concluded that the enterprises which have substantially implemented the practice and principles of lean management are at the same time those which implement IT in their business, i.e. the information systems which support the implementation of lean practice.*

Key words: *lean management, information technology, software solutions, ERP system*

JEL Classification: M11, M15

Received July 9, 2018 / Revised October 6, 2018 / Accepted October 15, 2018
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INTRODUCTION

The rapid growth of world markets as well as the application of modern information technologies force companies to change, representing the factor of their survival and growth. In the environment characterized by intense competition, survival is guaranteed only to those companies which realize the importance of constant innovation and introduction of new methods in the area of process quality improvement.

A large number of researchers is focused on continuous improvement of business processes. The instrument that has shown remarkable efficiency for the purposes of continuous improvement is lean management. Its essence is to add value and eliminate losses by reducing inventory, improving quality and reducing time, while reducing costs is a logic consequence.

Today, companies have to connect lean practice with the existing technology platform. Combining lean philosophy with new technologies gives them the chance to outperform their competitors with business processes designed to quickly respond to changes in consumer demand. This creates greater level of flexibility, too. It is desirable to make the most of the new technologies' creative power. For the companies facing incompatible information systems and inconsistent business practices, the ERP system is the best solution. In this way, companies are given the opportunity to standardize and automate business processes throughout the organization, as well as to incorporate automated error detection (to improve quality), thereby increasing productivity and reducing cycle duration (Wang & Nah, 2001).

The advancement of lean concept by information technology in Serbia is still an underdeveloped area. So far, this topic has not been given special attention and similar research has not been carried out. All this additionally enhances the scientific justification of this work.

1. LITERATURE REVIEW

Even though there are many definitions of lean management (LM), it might be said that it represents a systematic approach to identifying and eliminating activities that do not add value to business processes (Radosavljević et al., 2015). However, the benefits of lean management for an enterprise, possibly to a greater extent, are related to the management of product and information flow. Lean management describes a set of management principles and methods in order to differentiate between *loss* and *value* in organizations (Stone, 2012). Apart from exceptional success achieved within the production function, there is an increasing interest in exploring the application of lean management and non-productive functions (Arlbjørn & Freytag, 2013), since the acceptance of lean philosophy does not imply respecting lean principle only in production but in all processes taking place in the company. According to Rother and Shook (1999), the basic principles of lean management are value for the customer, value stream, continuous flow, pull strategy and continuous perfection.

Tanasić (2012, p. 310) also points to several axioms which lean as a modern concept is based on:

- The customer represents the essential condition for the existence of an enterprise and therefore should exist in the basis of all business functions;
- In order to be fully committed to customers and their needs and wishes, the enterprise must continuously eliminate the waste in everything it does;

- The enterprise becomes the organization that learns, putting emphasis on intellectual rather than material capital;
- Transparency represents the tool of timely response to both internal and external change;
- Innovation and gradual, continuous improvement become the integral part of the business culture and business philosophy of a modern enterprise;
- The enterprise must insist on creating the quality of products at the very source, or at every step of the value stream, at each stage of the business process;
- The application of an appropriate measurement system helps the enterprise and employees to stay on the right track, and repair and eliminate any omissions that disturb or slow down their pace.

The key elements for the successful implementation of standardization in LM are - operations, time, tools and accessories (Ősterman & Fundin, 2014). By formulating lean strategy, companies tend to differentiate themselves from competitors. In addition, as one of their goals, as has already been pointed out, is providing greater value for consumers, by concentrating on value and by eliminating losses and activities that do not add value, these companies are simultaneously increasing profit. It can be said that LM is actually an approach that allows elimination of nine types of losses - waiting, overproduction, unnecessary transport, inefficient process, supplies, unnecessary movement, defects, unused potential, absence of employees (Radosavljević et al., 2015). Each of these losses can be removed or at least minimized by careful planning of lean initiative and by setting goals related to continuous improvement. At the heart of these initiatives and goals is information technology.

Ghobakhloo and Hong (2014) conducted a study in order to determine whether the application of information technology and the principle of lean management were interdependent or mutually exclusive. Based on the data collected (230 leading Iranian and Malaysian auto parts manufacturers participated in the study), the conclusion was that lean management and information technology are mutually dependent, and that the value of IT investments can be effectively transformed into improving business performance if there is a higher degree of implementation of lean management system. Pillai et al., (2014) also conclude that information technology and lean management are extremely complementary and that their effective combination continuously improved business processes.

Together, lean and IT can increase efficiency and improve the effectiveness of the process by observing certain principles (EPA, 2015, p. 2):

- Inclusion of IT staff at all stages of the project related to the improvement of business processes (even as consultants, to help with the project plan);
- Using creativity instead of capital with the aim to solve problems (maximize improvement of processes that can be achieved by small, inexpensive changes, and consider whether additional resources are required to be invested in order to generate additional benefits);
- Rationalization/simplification of the process prior to their automation (otherwise there is the possibility of retention and deterioration of errors, which leads to inefficiency of the process);
- Monitoring the results of undertaken actions, identifying and addressing previous problems, evaluating the performance of the process with the help of software tools.

A large number of organizations implement document management and content management systems, trying to secure safe and fast storage of documents, as well as

undisturbed access to relevant information. By using software, companies can respond to the needs and demands of consumers in real time, and at the same time all feedback received from consumers can be organized in one database (Dubbaka & Dadkhah, 2009). The applications use structured information that exists in databases to automate business processes (Bell & Orzen, 2011). One study shows that lean principle needs to be adopted first, and then business activities that add value should be automated, since the information technology leads to further improvements already achieved by using lean principles (Bortolotti & Romano, 2012).

The effects of traditional lean concepts advancement with information technology are most evident in the field of monitoring and organizational performance improvement. By using technology, it is possible to generate highly effective, proactively targeted indicators that will signal managers and others where their attention is necessary (Bell & Orzen, 2011). A well-established measurement system provides managers, supervisors or expert associates with the opportunity to oversee the field of special interest for them and, if need be, they can get more detailed information. Focusing on processes requires a more frequent measurement of expected results over a shorter period (monthly/quarterly). This will enable the intervention to be undertaken as needed, before the negative impact on the outcome is reached.

Moyano-Fuentes et al. (2012) analysed in a case study the link between information technology and lean concept based on data from the automotive industry. The results of the hierarchical regression analysis have shown that the degree of internal IT use had a significant impact on the level of the lean concept implementation, while external IT had decisive influence only when internal IT systems are controlled. In this way, it has been proven that there is a positive link between the level of IT usage and the level of lean implementation. The use of IT tools mainly involves process automation or their importance in reflected both in providing necessary information for the implementation of advanced lean management and in supporting the decision-making system, in order for managers to choose the appropriate approach at the right time (Kobus & Westner, 2015). Similar conclusions came from Ward and Zhou (2006), who, in their study, inter alia, empirically investigated the connection between the integration of IT and lean practices and their positive impact on the shortening of process implementation time. Wan and Chen (2009) in their work pointed to web tools that can support the decision-making process and can help managers in implementing the lean principles. By using a web-based program, each user is enabled to evaluate the current status of the business system, to identify the segments where urgent reaction is required, and also to develop appropriate techniques and tools for the purpose of formulating a plan. Owing to this, the lean concept can be implemented more effectively and systematically. Ker et al. (2014) discussed how the application of lean principles and information technology can improve the process of drug/medicine distribution. The results of statistical analysis have shown that the introduction of digital scanning technology has led to a significant reduction in the duration of the process, and at the same time the reduction of costs.

Confronted with competition and rising consumer expectations, as well as with the need to significantly improve the performance of the process and achieve competitive advantages in the market, companies are nowadays increasingly choosing to apply modern software solutions, primarily for the ERP system (Harmon, 2014). Most companies take their existing processes into account when deciding on the implementation of the ERP system. After that, the attention is paid to the ERP modules that companies intend to install. The interfaces for the ERP applications are links to documents that are in the database. It is necessary to

determine the desired architecture of the process, then look at the specificities of each process and select the activities that need to be implemented (Harmon, 2014).

When consumers and suppliers request information fully integrated through a value chain, or when executives formulate strategies and tactics in areas such as manufacturing, procurement and accounting, the ERP system analyses the data and transforms them into useful information used by companies to support the decision-making process (Wang & Nah, 2001). Riezebos et al. (2009) indicate that ERP systems can significantly reduce the time needed to collect information related to products and processes and can help managers in delivering timely and quality information while at the same time costs are being reduced. Al-Mashari (2002) points out that the use of the ERP system can stimulate the adoption of standardized business processes throughout the organization. Packowski & Francas (2013), Riezebos et al. (2009) also point to the importance of increasing the presence of ERP systems, the main focus of which is to support internal processes. The examples of the ERP support to lean management include planning to improve the responsiveness due to variability of demand and to allow measuring the costs of products per order (Webb et al., 2009, p.222). The following figure summarizes the most significant benefits of the ERP system application.

Fig. 1 The most significant benefits of ERP system application
Source: Authors, based on: Powell, D. (2012). Investigating ERP support for Lean production, Ph.D. Thesis, Norwegian University of Science and Technology

Powell (2012) has formulated fifteen ways in which the modern ERP system supports lean production. Firstly, five key principles of lean concept (value, value stream, flow, pull and perfection) were identified and within them the way in which the ERP system can provide support. Some of these support modes primarily relate to planning, then to

control (e.g. support to the production control system - Kanban), while the others relate simultaneously to planning and control (e.g. support to Customer Relationship Management - CRM, support for the exchange of information through the entire chain) (Powell, 2012, p. 78).

Table 1 The ways in which ERP supports lean production

No	Principle	An ERP system for lean production should:	Reference:
1		Support customer relationship management	(Chen and Popovich, 2003)
2	*Value*	Automate necessary non-value adding activities (e.g. backflushing)	(Hamilton, 2009)
3		Enable process-modelling to support standard work processes	(IFS, 2008, Prediktor, 2010)
4	*Value stream*	Provide a source for easy-to-find product drawings and standard work instruction	(Houy, 2005, Tjahjono, 2009)
5		Support information sharing across the supply chain	(Bjorklund, 2009, Kob et.al., 2008)
6		Create synchronized and streamlined data flow (internal & external)	(Hamilton, 2003)
7		Support line balancing	(Steger-Jensen and Hvolby, 2008)
8	*Flow*	Support demand levelling	(Hamilton, 2009)
9		Support order less rate-based planning (e.g. tact-time)	(IFS, 2010)
10		Provide decision support for shop floor decision making	(Hamilton, 2009)
11		Support kanban control	(Hamilton, 2009, Masson and Jacobson, 2007)
12	*Pull*	Support production levelling	(Masson and Jacobson, 2007)
13		Support JIT procurement	(Masson and Jacobson, 2007)
14		Provide a system to support root-cause analysis and for the logging and follow-up of quality problems	(Bjorklund, 2009)
15	*Perfection*	Provide highly visual and transparent operational measures (e.g. real time status against plan)	(Prediktor, 2010)

Source: Powell, D. (2012). Investigating ERP support for Lean production, Ph.D. Thesis, Norwegian University of Science and Technology, p. 77.

2. RESEARCH METHODOLOGY

The goal of the empirical research is to determine the direction and intensity of the impact of information technologies on the performance of business processes in enterprises in Serbia. In this sense, one of the tasks of empirical research is to discover whether the postulates according to which lean concept operates are present in the Republic of Serbia's enterprises. It is expected that the research results will reveal these relations, and the discussion of results will explain the obtained results.

2.1. The assumptions and research methods

The survey was conducted on included enterprises from the territory of the Republic of Serbia that are registered in the Serbian Business Registers Agency. The selection of sample enterprises was done randomly. The research was carried out using the survey method based on a structured questionnaire. The questionnaires were distributed to 180 e-mail addresses of managers who evaluated the state of information technology in their enterprise. The response rate was 25.5% (46 enterprises). The main limitation is that the results were obtained by interviewing a limited number of respondents. A five-point Likert scale was used to examine the degree of respondents' agreement with the provided claims. Data analysis was performed using appropriate statistical methods, which are: descriptive statistics, correlation analysis and cluster analysis, $\chi 2$ test, applying the IBM SPSS statistical package software. The application of these statistical methods should enable the testing of the following hypotheses:

1. Doing business in the enterprises in Serbia rests on the postulates of the lean management,
2. Elements of the lean management are mutually correlated
3. The application and usefulness of IT is at a high level in the enterprises in Serbia,
4. The effects of IT implementation are mutually correlated,
5. There is statistically significant interdependence between the application and effects of IT and the lean practice in enterprises in Serbia.

Bearing in mind the research goal related to determining whether the enterprises in Serbia apply lean concept, the appropriate lean claims have been defined:

L1: The customer represents the essential reason for the existence of an enterprise and therefore should exist based on all business functions,

L2: In order to be fully committed to customers and their needs and wishes, the enterprise must continuously eliminate the waste in everything they do,

L3: The enterprise becomes the organization that learns, putting emphasis on intellectual rather than material capital,

L4: Transparency represents the tool of timely response to both internal and external change,

L5: Innovation and gradual, continuous improvement become the integral part of the business culture and business philosophy of a modern enterprise,

L6: The enterprise must insist on creating the quality of products at the very source, or at every step of the value stream, at each stage of the business process,

L7: The application of an appropriate measurement system helps the enterprise and employees stay on the right track, and repair and eliminate any omissions that disturb or slow down their pace.

In order to create an image of the state of information technologies in the observed enterprises, 12 claims (on the basis of theoretical considerations and corresponding aspects of the application of information technologies) have been defined:

IT1: Employees in the enterprise are trained to use modern information technologies,
IT2: In the enterprise, software tools are used to a large extent,
IT3: The ERP system is used in the enterprise,
IT4: Employees in the enterprise are trained to use the ERP system,
IT5: Using the ERP system contributes to reducing the process implementation time,
IT6: Implementation of the ERP system leads to the reduction in costs,
IT7: The ERP system supports organizational changes,
IT8: The ERP system contributes to strengthening connections and relationships with suppliers,
IT9: The ERP system provides improvement of the services provided to consumers,
IT10: Performance improvements were made after implementation of the ERP system,
IT11: The ERP system contributes to quality improvement,
IT12: The ERP system leads to increased productivity.

The first four claims directly concern IT implementation, while the purpose of the other 8 claims is to evaluate the effects and usefulness of IT, seen from the interviewed managers' perspective.

2.2. Results and discussion

The analysis of the significance of certain lean claims has shown that in enterprises the highest importance is attributed to product quality creation at the source, that is, at every step of the value stream, at each stage of the business process (LM6 average score 4.13, standard deviation 1.05). The LM7 claim has the lowest average rating It states that the application of an appropriate measurement system helps the enterprise and employees stay on the right track, and repair and eliminate any omissions that disturb or slow down their pace. Consequently, it can be said that the first hypothesis can be accepted since the average value of the claims concerning the LM implementation are all at least 3.5.

Table 2 Descriptive statistics for lean issues

	N	Minimum	Maximum	Mean	Std. Deviation
LM1	46	1.00	5.00	3.6087	1.20145
LM2	46	1.00	5.00	4.0217	1.14483
LM3	46	1.00	5.00	3.9565	1.11468
LM4	46	2.00	5.00	3.9783	.88164
LM5	46	1.00	5.00	3.7609	1.19601
LM6	46	1.00	5.00	4.1304	1.04581
LM7	46	1.00	5.00	3.4783	1.69626

Source: Authors' calculation, SPSS output

Table 3 provided the descriptive statistics overview of the claims regarding the application of information technology. In the context of descriptive statistics, the average estimates were made. Especially positive is the fact that the best-rated claims are IT2: In the enterprise, software tools are used to a large extent (average score 4.24) and IT9: The ERP system provides improvement of the services provided to consumers (average score 4.28). This is also confirmed by the low standard deviations. It is very important to notice the significance of using modern IT, which is a key factor in the success and survival of modern enterprises. Accordingly, there is a chance to increase the use of software solutions, in particular the ERP system in enterprises in Serbia and generate benefits based on their application. The weakest rated claim is IT4: Employees in the enterprise are trained to use the ERP system (average score 3.35). In this way, the weakness, which is still characteristic of the enterprises in Serbia, is reflected and it refers to insufficient training of employees for the work with software tools. Identical results were achieved by another research, which concluded that better results and overcoming of this problem should be expected in the upcoming period, as in time the change of generation among the employees will happen, and younger people, as a rule, are better at working with modern information technologies (Mitić, 2016, p. 82). The research results of the Republic Statistical Office show that in 2016 only 11.8% of enterprises provided training of ICT experts, while 30.2% of the enterprises enabled training for other employees to develop ICT skills (Republic Statistical Office, 2017). As in case of the first hypothesis, it can be said that the average values of the IT implementation and effects indicate that the third hypothesis can also be accepted.

Table 3 Descriptive Statistics for IT issues

	N	Minimum	Maximum	Mean	Std. Deviation
IT1	46	1.00	5.00	3.5870	1.55744
IT2	46	1.00	5.00	4.2391	1.15825
IT3	46	2.00	5.00	4.1739	.99564
IT4	46	1.00	5.00	3.3478	1.36979
IT5	46	1.00	5.00	3.7609	1.21445
IT6	46	2.00	5.00	4.0435	1.07407
IT7	46	1.00	5.00	3.9783	1.54185
IT8	46	1.00	5.00	4.1087	1.05889
IT9	46	1.00	5.00	4.2826	1.00362
IT10	46	1.00	5.00	3.6957	1.19014
IT11	46	1.00	5.00	3.9130	1.24412
IT12	46	1.00	5.00	4.1304	1.10772

Source: Authors' calculation, SPSS output

In order to check the consistency in implementation of lean management, it can be useful to inspect if there is a correlation between the observed claims. The correlation between the claims was investigated by the Spearman's correlation coefficient.

When it comes to mutual correlation between the lean claims presented in Table 4, it is noted that there is a lower or higher degree of correlation, but anyhow, it is positive. Therefore, the second hypothesis can be accepted. This means that the postulates, which lean concept relies on, are interconnected and that their synergetic effect can be ensured.

Table 4 Correlation analysis between lean variables

		LM1	LM2	LM3	LM4	LM5	LM6	LM7
LM1	Correlation Coefficient	1.000	.676**	.446**	.563**	.595**	.403**	.679**
	Sig. (2-tailed)	.	.000	.002	.000	.000	.005	.000
	N	46	46	46	46	46	46	46
LM2	Correlation Coefficient	.676**	1.000	.543**	.666**	.640**	.551**	.824**
	Sig. (2-tailed)	.000	.	.000	.000	.000	.000	.000
	N	46	46	46	46	46	46	46
LM3	Correlation Coefficient	.446**	.543**	1.000	.432**	.320*	.475**	.545**
	Sig. (2-tailed)	.002	.000	.	.003	.030	.001	.000
	N	46	46	46	46	46	46	46
LM4	Correlation Coefficient	.563**	.666**	.432**	1.000	.481**	.468**	.541**
	Sig. (2-tailed)	.000	.000	.003	.	.001	.001	.000
	N	46	46	46	46	46	46	46
LM5	Correlation Coefficient	.595**	.640**	.320*	.481**	1.000	.373*	.551**
	Sig. (2-tailed)	.000	.000	.030	.001	.	.011	.000
	N	46	46	46	46	46	46	46
LM6	Correlation Coefficient	.403**	.551**	.475**	.468**	.373*	1.000	.521**
	Sig. (2-tailed)	.005	.000	.001	.001	.011	.	.000
	N	46	46	46	46	46	46	46
LM7	Correlation Coefficient	.679**	.824**	.545**	.541**	.551**	.521**	1.000
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.
	N	46	46	46	46	46	46	46

** Correlation is significant at the 0.01 level (2-tailed).

Source: Authors' calculation, SPSS output

Since claims from IT5 to IT12 concern the effects of the implementation of the ERP system and the benefits it brings to the enterprise, these claims are used for further analysis, first correlation and then cluster.

Table 5 presents the results of the correlation analysis for IT. The results show that the correlations of claims are positive, but not all statistically significant. This leads to the conclusion that enterprises are not consistent in implementing the ERP system or that not all effects of IT implementation lead the enterprise in the same direction. This is the case of the claims IT6: Implementation of the ERP system leads to a reduction in costs, IT10: Performance improvements were made after implementation of the ERP system, IT11: The ERP system contributes to quality improvement, and IT12: The ERP system leads to increased productivity. Consequently, the fourth hypothesis cannot be accepted.

Table 5 Correlation analysis between IT variables

		IT5	IT6	IT7	IT8	IT9	IT10	IT11	IT12
IT5	Correlation Coefficient	1.000	.475**	.542**	.433**	.281	.179	.301*	.164
	Sig. (2-tailed)	.	.001	.000	.003	.058	.235	.042	.276
	N	46	46	46	46	46	46	46	46
IT6	Correlation Coefficient	.475**	1.000	.492**	.426**	.467**	.191	.252	.095
	Sig. (2-tailed)	.001	.	.001	.003	.001	.203	.092	.529
	N	46	46	46	46	46	46	46	46
IT7	Correlation Coefficient	.542**	.492**	1.000	.614**	.488**	.313*	.269	.223
	Sig. (2-tailed)	.000	.001	.	.000	.001	.034	.071	.136
	N	46	46	46	46	46	46	46	46
IT8	Correlation Coefficient	.433**	.426**	.614**	1.000	.381**	.305*	.203	.343*
	Sig. (2-tailed)	.003	.003	.000	.	.009	.039	.176	.020
	N	46	46	46	46	46	46	46	46
IT9	Correlation Coefficient	.281	.467**	.488**	.381**	1.000	.034	.016	.147
	Sig. (2-tailed)	.058	.001	.001	.009	.	.823	.917	.329
	N	46	46	46	46	46	46	46	46
IT10	Correlation Coefficient	.179	.191	.313*	.305*	.034	1.000	.170	.061
	Sig. (2-tailed)	.235	.203	.034	.039	.823	.	.260	.690
	N	46	46	46	46	46	46	46	46
IT11	Correlation Coefficient	.301*	.252	.269	.203	.016	.170	1.000	.388**
	Sig. (2-tailed)	.042	.092	.071	.176	.917	.260	.	.008
	N	46	46	46	46	46	46	46	46
IT12	Correlation Coefficient	.164	.095	.223	.343*	.147	.061	.388**	1.000
	Sig. (2-tailed)	.276	.529	.136	.020	.329	.690	.008	.
	N	46	46	46	46	46	46	46	46

*Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).
Source: Authors' calculation, SPSS output

In order to test the last hypothesis, the cluster analysis and χ^2 test have been used. The idea is to classify the enterprises into two clusters based on the LM implementation and, also into two clusters based on the IT effects, and then to compare the cluster membership of the enterprises based on χ^2 test. According to the answers related to 7 lean claims, enterprises are classified into two clusters. Also, according to the benefits that IT brings to the enterprise, the enterprises are also classified into two clusters, thus creating the possibility for appropriate comparison. The cluster analysis is performed based on the Hierarchical cluster analysis (cluster method - With-in groups linkage, interval – Squared Euclidean distance). Based on χ^2 test, the relationship between cluster membership based on IT and LM claims has been analysed. The results of χ^2 test are presented in the following table.

Table 6 χ^2 test statistics

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	4.403	1	.036		
Continuity Correction	2.781	1	.095		
Likelihood Ratio	6.638	1	.010		
Fisher's Exact Test				.078	.038
Linear-by-Linear Association	4.308	1	.038		
N of Valid Cases	46				

Source: Authors' calculation, SPSS output

Based on the significance level, which is 0.036 according to the Pearson Chi-Square and 0.038 according to the Fisher's Exact test, it can be concluded that there is a statistically significant relationship between clusters based on IT and LM claims. Consequently, based on this, it can be concluded that enterprises that have substantially implemented LM practices and principles are at the same time those which consider implementation of IT in their business as useful, which consequently means that the information systems represent the support for the implementation of the lean practice. Consequently, this means that there is statistically significant interdependence between the application and effects of IT and the LM implementation in enterprises in Serbia. Therefore, the fifth hypothesis can be accepted.

CONCLUSION

In this paper, the current business practice of the enterprises in the Republic of Serbia has been analysed. Based on this, the existing level of modernity and application of information technologies has been determined, as well as the level of attention paid to software solutions, and especially the ERP system. The analysis of the research results confirmed all three hypotheses that represent the starting point of the research. Precisely, based on Table 2, the first hypothesis was confirmed. The analysis has shown that there is an acceptable level of LM principles implementation, since lean claims have high average scores (especially L6: Enterprise must insist on creating the quality of products at the very source, at each stage of the business process and L2: Enterprise must continuously eliminate the waste in everything they do). Doing business in the enterprises in Serbia rests on the postulates of lean management, but the results in Table 4 (correlation between lean variables) indicate that there is a group of enterprises that implement LM principles, while, at the same time, there is another group of enterprises whose implementation of LM principles is not at an enviable level.

According to Table 3, the analysis has shown that there is an acceptable level of IT implementation effects. However, Table 5 shows that there is a high correlation coefficient between cluster membership and IT claims, indicating that there is a group of enterprises that characterises IT implementation, while, at the same time, there is another group of enterprises whose IT implementation is not at a high level. One must also have in mind that the enterprises in Serbia are in different stages of the ERP system implementation, so they are faced with different costs, depending on the current stage. In addition, after the ERP

system implementation, certain costs related to its maintenance, additional training of employees and the use of consulting services will certainly occur.

When it comes to the correlation between the cluster's affiliation to IT and LM claims, the significance of 0.036 and 0.038 shows that, in this case, there is a positive relationship that is statistically significant. This precisely points out to the conclusion that in the coming period, there is a chance for even greater application of modern information and communication technologies providing necessary support for the implementation of lean principles in the enterprises in Serbia.

In order to monitor the variability of the research results, it is necessary to repeat the research after a while, and include even more respondents, as well as to expand the subject of the research. Based on the analysis presented in this paper, potential improvements and recommendations can be proposed. First of all, it is necessary to provide additional training to employees in order to reduce the gap between their skills and the requirements imposed by the use of a modern ERP system. The recommendation to enterprises is to continuously invest in purchase and maintenance of modern information technologies, since the level of their application in an enterprise has both direct and indirect impact on business performance. Further research could involve deeper analysis of the enterprises that have been implementing LM and IT, for example, concerning the following independent variables: size, capital origin, managers' orientation, managers' origin and so on.

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ULOGA INFORMACIONE TEHNOLOGIJE U IMPLEMENTACIJI LEAN KONCEPTA

Postizanje i jačanje konkurentske prednosti predstavlja ključni faktor opstanka i uspešnosti poslovanja savremenih preduzeća. Činjenica je da uspešna primena lean menadžmenta dovodi do povećanja produktivnosti i kompetentnosti. Međutim, u cilju održavanja profitabilnosti i poslovne stabilnosti, neophodna je podrška lean konceptu koja se ogleda pre svega u primeni savremene informacione tehnologije. Primenom ERP sistema omogućava se prilagođavanje osnovnih lean principa zahtevima savremenog okruženja koje karakteriše konstantna promena zahteva i potreba potrošača/korisnika. Osnovni cilj istraživanja je da se ispita postojeći nivo primene savremenih informacionih tehnologija, kao i nivo pažnje koji se poklanja integraciji lean koncepta i softverskih rešenja, u preduzećima u Srbiji. Teorijski aspekt istraživanja odnosi se na pronalaženje odgovarajuće osnove za zaključivanje na bazi postojeće literature. U radu su identifikovani istraživački jazovi i predloženi dalji pravci istraživanja. Primenom odgovarajućih statističkih alata (deskriptivna statistika, klaster analiza, korelaciona analiza, χ2 test) konačno je zaključeno da preduzeća koja su u značajnoj meri implementirala praksu i principe lean menadžmenta, jesu istovremeno i ona koja u svom poslovanju primenjuju IT, odnosno informacione sisteme za podršku implementaciji lean prakse.

Ključne reči**:** *lean menadžment, informacione tehnologije, softverska rešenja, ERP sistem*

FACTA UNIVERSITATIS
Series: **Economics and Organization** Vol. 15, N° 4, 2018, pp. 363 - 378
https://doi.org/10.22190/FUEO1804363D

Review Paper

JOB SATISFACTION ARTICLES - COMPARISON UPON SELECTED CRITERIA

UDC 005.32:331.101.32

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Abstract. *Although the concept of job satisfaction has been explored and analyzed in numerous studies, it can be noticed that this concept has been studied in various ways. For this reason, the subject of research in this paper is a set of different scientific articles with topic related to job satisfaction. As the basic aim of this paper is to gain insight into the concept of job satisfaction, a research was carried out on a convenience sample of scientific articles. The results show that authors use different approaches when defining, studying and evaluating job satisfaction in their research. As a result, different methodologies, job satisfaction factors and scales designed for the assessment of job satisfaction can be found in existing literature.*

Key words: *job satisfaction, job satisfaction factors, the assessment of job satisfaction, job satisfaction scales*

JEL Classification: M5, D23, J28

INTRODUCTION

When it comes to management activities, it can be said that human resource management is of great importance for organizational success. Human resources have become a significant source of competitiveness and success (Garrido et al., 2005) and human resource management has become increasingly important in modern organizations (Gustainienė & Endriulaitienė, 2009).

Human resource management is a part of the organizational science which studies all aspects of employment in organizations. It also represents an important managerial

Received July 05, 2018 / Revised October 19, 2018 / Accepted October 26, 2018
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function that has been facing special challenges in recent years due to globalization, rapid technological change, change in demographic structure, etc. (Bogićević Milikić, 2006). Several meanings of this concept can be found in scientific and professional literature, which results in different definitions. According to one of the broadly accepted definitions, human resource management refers to policies, practices and systems that affect the behavior of employees, their attitudes and work performance (Noe et al., 2011). Therefore, employees, their knowledge, skills, abilities, behaviors and specific relationships are the subject of human resource management in organizations. Compared to the narrow economic concept of the manpower the idea that employees should be considered broader originates from the first half of the last century. The thesis that an increase in employee satisfaction increases their efficiency was developed in the 1940s. Since then, human resource management has been intensively developing and changing as a scientific discipline.

Since there is no unique attitude about activities that are part of this function, different classifications of human resource management activities can be found in existing literature. However, most of these definitions include the following activities in the domain of human resources: job analysis, human resource planning, recruitment and selection, training and development, performance evaluation and rewarding, labor relations, health and safety protection, as well as managing the process of employee turnover (Bogićević Milikić, 2006). Organizations are forced to focus on creating added value through human capital in today's business conditions. If employees are adequately managed, they can become a very important source of competitive advantage. In order to achieve organizational goals, it is necessary to create a quality work environment in which employees will be satisfied with their job.

When it comes to job satisfaction, it can be said that a single definition of this concept does not exist. In broad terms, job satisfaction refers to the degree to which people love their jobs (Spector, 1997), and includes positive or negative attitudes that individuals have toward their work (Greenberg, 2011). Job satisfaction refers to the combination of cognitive and affective responses to different perceptions of what employees want to receive compared to what they actually receive (Cranny et al., 1992). It is actually an attitude that includes certain assumptions and beliefs about job (cognitive component), feelings toward job (affective component), and job evaluation itself (evaluation component). Scientists use this concept to show a combination of employees' feelings about different aspects of job, such as: the nature of work itself, the level of salary, opportunities for promotion and satisfaction with associates (Schermerhorn et al., 2005). The importance of studying job satisfaction stems from two important reasons. First, job satisfaction is associated with increased productivity and organizational commitment, less absence and fluctuation, as well as increased organizational efficiency (Ellickson & Logsdon, 2001). Benefits that employees receive affect their effort, skills, creativity and productivity (Wright & Davis, 2003). Organizational interest in job satisfaction is also motivated by humanitarian interests or understanding that employees deserve to be treated with respect and have their mental and physical well-being at the maximum level (Spector, 1997; Ellickson & Logsdon, 2001). Another important conclusion is that low level of job satisfaction has negative consequences, such as withdrawal, cost increases, profit reduction, and, consequently, customer dissatisfaction (Zeffane et al., 2008). Dissatisfied workers can develop problematic behaviors that negatively affect their productivity and performance and affect other employees around them (Spector, 1997). Low level of job satisfaction can be an important

indicator of the counterproductive behavior and can lead to behavior such as absenteeism (Spector, 1985) and intended fluctuation (Spector, 1985; Dupre & Day, 2007).

Numerous studies over several decades have tried to determine and classify factors affecting job satisfaction. Previous research has identified a number of factors that can be grouped into two categories: (1) demographic factors and (2) environmental factors. Demographic factors include personal attributes and employee characteristics such as gender, age, education level, marital status and others, while environmental factors relate to work-related characteristics, such as salaries, promotions, controls, etc. (Zeffane, 1994; Reiner & Zhao, 1999; Ellickson & Logsdon, 2001).

It is said that job satisfaction is one of the most important attitudes that employees have in relation to their job (Schneider, 1985). A great number of theoreticians, practitioners and researchers deal with this topic all around the world. They study human resource activities and many other factors that affect job satisfaction among employees. For this reason, this paper is focused on job satisfaction articles, with special focus on comparison upon selected criteria. The subject of this paper is the analysis of scientific articles that study job satisfaction. The main objectives of this type of analysis are (1) to gain a basic insight into the research topic, (2) to discover more details about the research problem, (3) to identify the theoretical framework for the observed problem and (4) to collect information for more complex research that will be carried out in the future (Saunders et al., 2009; Neuman, 2014).

The basic scientific methods used in this paper are: sampling method, content analysis, classification method and comparative method. These methods were selected as the most appropriate methods regarding the subject of research, its theoretical character, as well as the previously stated goals and the purpose of the paper.

In addition to the introduction, conclusion and literature, this paper consists of four parts. Theoretical framework is given in the introduction of the paper where basic concepts of the research problem are summarized. The first part of the paper refers to methodological basics of conducted analysis, while the second part includes research results. Limitations of the research are listed in the third part, while recommendations for the future research are given in the fourth part. Basic conclusions are given at the end of the paper.

1. METHODOLOGY

As the purpose of this paper is to obtain a basic insight into the problem of job satisfaction, this paper will analyze several scientific articles, using a convenience sample. This sample is one of the most commonly used samples in the research. It belongs to a group of samples obtained by deliberate choice of researchers. Suitability or availability is the basic criterion for selecting units into the sample (Battaglia, 2008). A convenience sample can be very useful in surveys. Information obtained from this type of sample can be used to discover the way in which the subject of the research is observed, as the initial basis for definition of hypothesis about specific research problems or for identifying shortcomings in research instruments (Salkind, 2010). However, due to the fact that a convenience sample belongs to a group of samples that are not based on the probability

theory, one should keep in mind its basic advantages and disadvantages when using it (Daniel, 2012).

In order to improve the value of a convenience sample, researchers can pay special attention to the criteria for selecting units in the sample in accordance with the subject of their research (Wegner, 2013). For this reason, the criteria used in the selection of articles for the analysis in this paper are also defined:

1) among other factors, the subject of research has to include job satisfaction,
2) job satisfaction should be stated in the theoretical basis of the articles,
3) each article should focus on different research subjects from the same/different countries,
4) the sample should only include articles published in two journals with the Thompson-Reuters Social Science Citation Index: Human Resource Management and Human Resource Management Journal.

Determining the first criterion was motivated by the desire that reviewed articles analyze direct relationship between job satisfaction and other factors in organization, in order to explore possible ways for the study and assessment of job satisfaction. The criterion related to the theoretical basis was derived from the fact that defined research subject should relate to job satisfaction, while the third criterion is defined in order to provide diverse information from countries that have different status in the international economy, which are at different levels of economic development and belong to different cultures. Focusing attention on one group of countries cannot provide generalizations regarding given problems (Lopez-Duarte et al., 2015). The fourth criterion was designed to ensure that only high-quality articles were analyzed, given the rigorous review procedures and the selection that these journals use. Since the observed journals are intended for academic and business researchers, theoreticians, consultants and managers involved in human resource issues, they are very suitable for job satisfaction analysis. For this reason, only articles published in the above-mentioned journals will be selected in the sample.

The procedure for selecting a sample of articles was done using the Google Scholar Internet Browser and internet pages of the listed journals. Ten articles that met the four stated criteria were selected.

The list of articles selected for the analysis in this paper, as well as their basic bibliographic information is given in Table 1.

In order to ensure the comparability of the articles and set the basis for the synthesis of their results, several factors have been defined. The factors identified and compared in each article are:

1) methodology and techniques of data collection;
2) subjects of research;
3) response rate;
4) independent variables;
5) dependent variables;
6) controlling variables;
7) description, validity, results and the source of job satisfaction scales;
8) limitations and recommendations for further research.

Table 1 List of selected articles

	Bibliographic data
1.	Alfes, K., Shantz, A. & Van Baalen, S. (2016). Reducing perceptions of overqualification and its impact on job satisfaction: the dual roles of interpersonal relationships at work. *Human Resource Management Journal*, 26(1), 84-101.
2.	Brunetto, Y., Teo, S., Shacklock, K. & Farr-Wharton, R. (2012). Emotional intelligence, job satisfaction, well-being and engagement: explaining organizational commitment and turnover intentions in policing. *Human Resource Management Journal*, 22(4), 428-441.
3.	Buonocore, F. & Russo, M. (2013). Reducing the effects of work-family conflict on job satisfaction: the kind of commitment matters. *Human Resource Management Journal*, 23(1), 91-108.
4.	Flickinger, M., Allscher, M. & Fiedler, M. (2016). The mediating role od leader-member exchange: a study of job satisfaction and turnover intentions in temporary work. *Human Resource Management Journal*, 26(1), 46-62.
5.	Gittell, J.H., Weinberg, D.B., Pfefferle, S. & Bishop, C. (2008). Impact of relational coordination on job satisfaction and quality outcomes: a study of nursing homes. *Human Resource Management Journal*, 18(2), 154-170.
6.	Holman, D. (2002). Employee wellbeing in call centres. *Human Resource Management Journal*, 12(4), 35-50.
7.	Huang, Q. & Gamble, J. (2015). Social expectations, gender and job satisfaction: Front line employees in China's retail sector. *Human Resource Management Journal*, 25(3), 331-347.
8.	Holland, P., Pyman, A., Cooper, B. & Teicher, J. (2011). Employee voice and job satisfaction in Australia: the centrality of direct voice. *Human Resource Management*, 50(1), 95-111.
9.	Mayfield, J., Mayfield, M. & Kopf, J. (1998). The effects of leader motivating language on subordinate performance and satisfaction. *Human Resource Management*, 37(3), 235-248.
10.	Baumgartner, M., Dwertmann, D., Boehm, S. & Bruch, H. (2015). Job satisfaction of employees with disabilities: the role of perceived structural flexibility. *Human Resource Management*, 54(2), 323-343.

Source: author

These factors were selected on recommendations about elements that every detailed literature review based on the analysis of previous empirical studies should contain (Saunders et al., 2009; Bryman, 2012; Creswell, 2013).

2. Results of the Analysis

Results are presented in three separate sections. The first part deals with the methodological aspects of analyzed articles and includes methodology and techniques of data collection, research subjects and response rates. The second part consists of conceptual aspects of analyzed articles and within it independent, dependent and control variables are identified, while scales for the assessment of job satisfaction are identified and described within the third part.

2.1. Methodological aspects of analyzed articles

A comparative overview of methodological aspects is presented in Table 2.

Table 2 Comparative overview of methodological aspects

Author(s) and year	Methodology and techniques	Research subjects	Response rate
Alfes, Shantz & Van Baalen, 2016	Quantitative, email survey	Planned sample: 472 workers Surveyed: 183 workers employed in 2 organizations in the Netherlands	38,77%
Brunetto, Teo, Shacklock & Farr-Wharton, 2012	Quantitative, survey distributed directly to respondents	Planned sample: 750 workers Surveyed: 193 police officers of the state police departments, Australia	26%
Buonocore & Russo, 2013	Quantitative, survey distributed directly to respondents	Planned sample: 197 workers Surveyed: 171 nurses working in state hospitals and private clinics located in the Campania region, Italy	86,8%
Flickinger, Allscher & Fiedler, 2016	Quantitative, email survey	Surveyed: 593 workers employed by the Employment Agency, Germany	-
Gittell, Weinberg, Pfefferle & Bishop, 2008	Quantitative, email survey	Planned sample: 255 workers Surveyed: 252 nursing assistants in 15 nursing homes	99%
Holman, 2002	Qualitative-quantitative, email survey, interview	Planned sample: 705 workers Surveyed: 557 customer service representatives employed in 3 different call centers in banks, Great Britain	79%
Huang & Gamble, 2015	Quantitative, email survey	Planned sample: 2200 workers Surveyed: 1838 workers from 22 stores owned by multinational retailers from Great Britain and Japan and local stores in 8 Chinese cities	84%
Holland, Pyman, Cooper & Teicher, 2011	Quantitative, telephone and email survey	Surveyed: 1022 workers who work more than 10 hours a week, Australia,	-
Mayfield, Mayfield & Kopf, 1998	Quantitative, email survey	Planned sample: 450 workers Surveyed: 164 medical workers (151 nurses and 13 supervisors) employed by a large state-owned health care company located in the southeastern part of the United States	44%
Baumgartner, Dwertmann, Boehm & Bruch, 2015	Quantitative, email survey	Planned sample: 7530 workers Surveyed: 4141 workers employed in 110 companies from different industrial sectors, Germany	55%

Source: author

Regarding the methodological approach, most studies have a quantitative character while qualitative and mixed qualitative-quantitative studies are rare (Holman, 2002). In accordance with the nature of the research, authors use different methodological techniques and

instruments, most often using an email survey (Alfes et al., 2016; Gittell et al., 2008; Holman, 2002; Huang & Gamble, 2015; Holland et al., 2011; Mayfield et al, 1998; Baumgartner et al., 2015; Flickinger et al., 2016). In two studies, the survey was distributed directly to respondents (Brunetto et al., 2012; Buonocore & Russo, 2013), while the survey by phone was used once (Holland et al., 2011). In addition to the survey, an in-depth interview was used in one study (Holman, 2002).

Research subjects had a different character. Job satisfaction was studied in various industrial sectors and countries (Flickinger et al., 2016; Holland et al., 2011; Baumgartner et al., 2015). A number of studies are focused on particular groups of workers such as police (Brunetto et al., 2012), medical staff (Buonocore & Russo, 2013; Gittell et al., 2008; Mayfield et al., 1998), traders (Huang & Gamble, 2015) and call center workers (Holman, 2002), while on the other hand, some studies are focused exclusively on workers from a particular organization (Alfes et al., 2016; Mayfield et al., 1998) or workers employed by a particular employment agency (Flickinger et al., 2016).

The response rate was set as an indicator of the quality of analyzed articles and their research instruments. The response rate ranged from 26% to 99%, depending on the country where the empirical research was conducted. In two studies, the response rate was not indicated (Flickinger et al., 2016; Holland et al., 2011).

When it comes to observed methodological aspects, it can be noticed that the most frequent mentioned research limitations are related to the sample and subjects of the research. Thus, the most common limitation is the fact that generalizations are not possible and that further research is required, preferably of longitudinal nature, on larger samples or samples that will emerge from different countries.

2.2. Conceptual aspects of analyzed articles

A comparative overview of conceptual aspects related to independent, dependent and controlling variables is given in Table 3.

The first thing that can be noticed from the given table is that different authors use different operationalizations of dependent, independent and controllable variables.

The choice of independent variables depends primarily on research objectives, so different authors choose different independent variables in their research. The number of independent variables listed in the previous table illustrates the complexity of the job satisfaction concept. Although most authors agree that a number of independent variables (different internal and external factors) must be taken into account when researching job satisfaction, there is a disagreement about the most important factors that should be examined and about the best way for their operationalization. While it is quite justified for different authors to have different approach regarding the way they want to express job satisfaction (through some subjective categories or through some objective categories), in order to obtain a complete picture, the major problem for anyone who analyzes these studies is the absence of standardization in the determinants of job satisfaction. Thus, different independent variables were identified and different classifications of factors influencing job satisfaction were found in each of the studies. Also, it can be noticed that most authors mainly analyze the influence of various factors on job satisfaction, while a certain number of authors analyze the impact of job satisfaction on certain categories and observes job satisfaction as an independent variable (Brunetto et al., 2012; Flickinger et al., 2016).

Table 3 A comparative overview of conceptual aspects

Author(s) and year	Independent variables	Dependent variables	Control variables
Alfes, Shantz & Van Baalen, 2016	Leader – member exchange, Team cohesiveness, Perceptions of overqualification.	*Job satisfaction.*	Age, Working time, Contract type, Organisation.
Brunetto, Teo, Shacklock & Farr-Wharton, 2012	Emotional intelligence, Well-being, Employee engagement, Affective commitment, *Job satisfaction.*	Turnover intentions.	Age, Gender,
Buonocore & Russo, 2013	Time-based conflict, Strain-based conflict, Behavior-based conflict, Affective commitment, Normative commitment, Continuance commitment.	*Job satisfaction.*	Gender, Tenure, Presence of dual-earner couples, Number of children, Family responsibilities, Work schedule, Position with high level of responsibility, Number of working hours per week.
Flickinger, Allscher & Fiedler, 2016	Type of contract, Quality of leader – member exchange, *Job satisfaction.*	Turnover intentions.	Volition, Age, Tenure, Decision making, Hierarchical level, Firm size, Industry.
Gittell, Weinberg, Pfefferle & Bishop, 2008	Relational coordination between employees.	Resident quality of life, *Job satisfaction.*	Age, Work experience, Gender.
Holman, 2002	Job design, Monitoring, Human Resource Practices, Team leader support.	Anxiety, Depression, *Intrinsic job satisfaction,* *Extrinsic job satisfaction.*	Age, Tenure, Working time, Gender.
Huang & Gamble, 2015	Gender, Pay, Training, Working time, Workload, Interaction with customers.	*Job satisfaction.*	Age, Marital status, Education, Children, Ownership, Hierarchical level.
Holland, Pyman, Cooper & Teicher, 2011	Employee voice arrangements, Direct voice, United Voice.	*Job satisfaction.*	Age, Gender, Organizational size, Industry, Working time, Occupation, Gross weekly wage, Tenure, Union membership.
Mayfield, Mayfield & Kopf, 1998	Superiors' use of motivating language, Perlocutionary language, Illocutionary language, Locutionary language.	Performance, *Job satisfaction.*	-
Baumgartner, Dwertmann, Boehm & Bruch, 2015	Disability, Formalization, Centralization.	*Job satisfaction.*	Organization, Organizational size, Industry, Organizational unit, Hierarchical level, Tenure, Education, Gender, Age.

Source: author

The second observation concerns the dependent variable. In most analyzed articles, job satisfaction is the only one dependent variable, while in some studies authors observe the influence of various factors on job satisfaction and other variables, such as: quality of life (Gittell et al., 2008), anxiety and depression (Holman, 2002) and performance (Mayfield et al., 1998). Job satisfaction can sometimes be viewed both as intrinsic and extrinsic satisfaction (Holman, 2002). In cases where job satisfaction appears as an independent variable, the authors observed its impact on turnover intentions (Brunetto et al., 2012; Flickinger et al., 2016).

Regarding control variables used in the analyzed articles, it can be seen that the influence of age (8 articles), gender (6), type of contract (6), hierarchical level (5), tenure (5), working time (4) and company size (3) is observed in most studies. In a smaller number of studies, the influence of control variables such as: number of children (2), education (2), industry (2), union (2), salary (1), ownership (1), occupation (1), marital status (1), schedule at work (1) and family responsibility (1) is observed. In one study, authors did not use control variables (Mayfield et al., 1998).

If conceptual aspects are observed, it can be noted that the most frequently mentioned limitation refers to a number of variables, with the recommendation that a greater number of variables should be included in future research, with different authors referring to different types of variables. Some of them think that it is necessary to include a larger number of independent variables, others consider necessary to include more dependent variables, while the third advocates for more independent and dependent variables. However, insisting on the inclusion of new variables will not be productive if different measurement instruments continue to be used.

2.3. A comparative overview of the scales used for the assessment of job satisfaction

The third part of the analysis refers to a comparative overview of scales used for the assessment of job satisfaction. A comparison of the basic characteristics of used scales was made on the basis of the criteria proposed in literature, which include: a description of the scales, validity, results and source (Bearden et al., 2011). The results of the analysis are presented in Table 4.

When looking at the scales used in analyzed articles, it can be noticed that different authors identify different aspects, factors or determinants of job satisfaction. For this reason, job satisfaction scales are created as scales with one item or as multiple item scales. Thus, authors used scales that consist of 36 items related to different job factors (Buonocore & Russo, 2013), scales with eight or seven items (Holman, 2002), six items (Huang & Gamble, 2015), five items (Flickinger et al., 2016, Baumgartner et al., 2015), four items (Brunetto et al., 2012; Mayfield et al., 1998), three items (Alfes et al., 2016), as well as single-item scales (Gittell et al., 2008; Holland et al., 2011).

Table 4 A comparative overview of scales used for the assessment of job satisfaction

Author(s) and year	Description of the scale	Validity	Result	Source
Alfes, Shantz & Van Baalen, 2016	*3 items:* - All in all, I am satisfied with my job. - Generally, I like working here. - When everything is taken into account, I am satisfied with my current job. *7-point Likert-type scale:* 1 - strongly disagree; 7 - strongly agree	Cronbach's alpha 0.91	Mean: 6.07 Standard deviation: 0.98	Takeuchi, R., Chen, G. & Lepak, D.P. (2009). Through the looking glass of a social system. Cross-level effects of high-performance work systems on employees' attitudes. *Personnel Psychology*, 62(1), 1–29.
Brunetto, Teo, Shacklock & Farr-Wharton, 2012	*4 items:* - I feel that my job is valuable, - I think that I do something worthwhile at my job, - I think my job is interesting, - I think that my job is fulfilling. *6-point Likert-type scale:* 1 – strongly disagree; 6 – strongly agree.	Cronbach's alpha 0.89	Mean: 4.40 Standard deviation: 0.87	Johlke, M.C. & Duhan, D.F. (2000). Supervisor communication practices and service employee job outcomes. *Journal of Service Research*, 3(2), 154–165.
Buonocore & Russo, 2013	*36 items*: how satisfied or dissatisfied employees are with a number of work factors, including: salaries, promotions, relationships with colleagues and supervisors, the nature of the work, etc. *6-point Likert-type scale:* 1 – strongly disagree; 6 – strongly agree.	Cronbach's alpha 0.84	Mean: 2.61 Standard deviation: 0.45	Spector, P.E. (1985). Measurement of human service staff satisfaction: development of the job satisfaction survey. *American Journal of Community Psychology*, 13(6), 693–713.
Flickinger, Allscher & Fiedler, 2016	*5 items:* - work, - supervision, - pay, - promotion, - co-workers. *7-point Likert-type scale:* 1 – disagree strongly; 7 – agree strongly.	Cronbach's alpha 0.90	Mean: 4.62 Standard deviation: 1.27	Smith, P., Kendall, L. & Hulin, C. (1969). *The Measurement of Satisfaction in Work and Retirement*, Chicago: Rand-McNally.
Gittell, Weinberg, Pfefferle & Bishop, 2008	*1 item:* - Overall, how satisfied are you with your job? *5-point Likert-type scale:* 1 – very satisfied; 5 – very dissatisfied.	Authors believe that scales with one item can provide the best global assessment of job satisfaction	Mean and standard deviation are not mentioned.	Scarpello, V. & Campbell, J.P. (1983). Job satisfaction: are the parts all there? *Personnel Psychology*, 36(3), 577–600.

Holman, 2002	*Intrinsic job satisfaction* *7 items:* the extent to which individuals were satisfied with features integral to the work itself. *Extrinsic job satisfaction* *8 items*: the extent to which individuals were satisfied with features external to the work itself. *5-point Likert-type scale:* 1 – not at all; 5 – a great deal.	Intrinsic job satisfaction - Cronbach's alpha 0.88 Extrinsic job satisfaction - Cronbach's alpha 0.80	Intrinsic job satisfaction: Mean: 3.98 Standard deviation: 1.13 Extrinsic job satisfaction: Mean: 4.76 Standard deviation: 0.79	Warr, P.B., Cook, J.D. & Wall, T D. (1979). Scales for the measurement of some work attitudes and aspects of psychological well-being. *Journal of Occupational Psychology*, 52(2), 285-294.
Huang & Gamble, 2015	*6 items:* - achievement, - initiative, - influence, - training, - salary, - job itself. *5-point Likert-type scale:* 1 – strongly disagree; 5 – strongly agree.	Cronbach's alpha 0.72	Mean: 3.16 Standard deviation: 0.487	Jones, M., Jones, J., Latreille, P. & Sloane, P. (2009). Training, job satisfaction and workplace performance in Britain: evidence from WERS 2004. *Labour (Committee on Canadian Labour History)*, 23(1), 139–175.
Holland, Pyman, Cooper & Teicher, 2011	*1 item:* - Overall, I am satisfied with my job. *5-point Likert-type scale:* 1 – strongly disagree; 5 – strongly agree.	Authors believe that scales with one item can provide the best global assessment of job satisfaction	Mean and standard deviation are not mentioned.	Saari, L.M. & Judge, T.A. (2004). Employee attitudes and job satisfaction. *Human Resource Management*, 43(4), 395–407. Spector, P.E. (1997). *Job satisfaction: Application, assessment, cause, and consequences*. Thousand Oaks: Sage Publications.
Mayfield, Mayfield & Kopf, 1998	*4 items*: - how much of the time they feel satisfied with their job, - how well they like their job, - how they feel about changing their job, - how they think they compare with other people. *7-point Likert-type scale:* 1 – strongly disagree; 7 – strongly agree.	Cronbach's alpha 0.71	Mean: 4.19 Standard deviation: 0.84	Hoppock, R. (1935). *Job satisfaction*. New York: Harper Row.
Baumgartner, Dwertmann, Boehm & Bruch, 2015	*5 items:* - work, - coworkers, - supervision, - promotion, - pay. *7-point Likert-type scale:* 1 – very dissatisfied; 7 – very satisfied.	Cronbach's alpha 0.82	Mean: 5.09 Standard deviation: 1.18	Smith, P.C., Kendall, L.M. & Hulin, C.L. (1969). *The measurement of satisfaction in work and retirement*. Chicago: Rand McNally.

Source: author

From the previous table, it can be seen that all authors of the analyzed articles consider that Likert-type scale should be used for evaluation of defined items. The aim of this type of scale is to examine the attitude of respondents towards the subject of research, which can be ranged from an absolutely positive to an absolutely negative attitude. Likert-type scales with seven points are considered as the most suitable for the assessment of job satisfaction (Alfes et al., 2016; Flickinger et al., 2016; Mayfield et al., 1998; Baumgartner et al., 2015), as well as five-point scales (Gittell et al., 2008; Holman, 2002; Huang & Gamble, 2015; Holland et al., 2011), while six-point scales are less represented (Brunetto et al., 2012; Buonocore & Russo, 2013).

Cronbach's alpha was used to measure the internal conformity and reliability of the data collected in most of the analyzed studies. Cronbach's alpha was used as a measure for assessing the degree of non-contradiction between the variables in multiple measurements (Carmines & Zeller, 1979; Devellis, 2003). The calculated reference value of Cronbach's alpha in two conducted studies was ≥ 0.90 (Alfes et al., 2016; Flickinger et al., 2016), and in accordance with defined criteria, job satisfaction scales used in these studies can be assessed as wholes that possess excellent internal consent and reliability. The Cronbach's alpha had a value of $0.9 > \alpha \geq 0.8$ in four studies (Buonocore & Russo, 2013; Holman, 2002; Baumgartner et al., 2015; Brunetto et al., 2012) and the data collected in these studies can be evaluated as good, while the values of the Cronbach's alpha in the remaining two studies were $0.8> \alpha \geq 0.7$ (Huang & Gamble, 2015; Mayfield et al., 1998), where the collected data were evaluated as acceptable and reliable.

In contrast to the above-mentioned studies with multi-dimensional scales, authors who use scales with one item believe that the direct question can best measure job satisfaction and provide the best global assessment of job satisfaction (Gittell et al., 2008; Holland et al., 2011).

The descriptive statistics from Table 4 refer to the mean and the standard deviation. Based on the analysis of these results, it can be concluded that the arithmetic mean has a value above the neutral medium in most studies, which means that respondents had a positive attitude towards job satisfaction. A more detailed insight into the respondents' responses could be obtained if the answers of respondents were sorted according to individual attitudes, which is not shown in analyzed articles.

The characteristic of all analyzed articles is the replication of scales from other articles and from previous studies. This can be justified by the fact that the scales used in previous research have already been proven as reliable and valid instruments for the assessment of job satisfaction.

Based on the analysis of the scales used by the authors of the analyzed articles, it can be concluded that the three-item scale (Alfes et al., 2016), whose reference value for the Cronbach's alpha was 0.91, was the best instrument for the assessment of job satisfaction. Also, five-item scales (Flickinger et al., 2016; Baumgartner et al., 2015) had high reference values for Cronbach's alpha. In the first study Cronbach's alpha was 0.90, and in the second study it was 0.82. These are seven-point Likert-type scales, which can be taken as a recommendation for future research dealing with this subject. However, since other scales used in the analyzed articles had an acceptable or good level of reliability, they can be also used in future research. This conclusion is not surprising, since it was created as a result of the analysis carried out on units selected from quality journals that apply rigorous procedures for selection and reviews of scientific articles.

In general, from the basic findings of analyzed articles, it is not possible to derive universally applicable premises that must be followed when modeling job satisfaction. In accordance with different research objectives, research designs, conceptualizations, research subjects and applied measurement instruments, various authors come up with different results, which also leads to differences in their conclusions. However, this conclusion is not limited to the articles analyzed in this paper, and according to the findings of more extensive and more complex literature analyzes, this is characteristic of job satisfaction studies in general. In this sense, there are three basic criticisms directed to the authors dealing with this issue. The first two concern the choice of variables that are studied and the definition of their relationships that have no basis in some previous research, and therefore do not represent replications of previous studies that would lead to generalizations. The third criticism concerns measuring instruments. When using similar variables different authors measure them differently, which makes it more difficult to improve the existing level of knowledge in this field.

3. Limitations of the Research

Although several conclusions can be drawn from the results of the conducted research, it is necessary to consider some basic limitations in their interpretation.

The first limitation is related to the sample size. This research was conducted on a small sample which includes ten scientific articles. Due to the number of previous studies on the job satisfaction concept, it would be useful to include more articles in further research.

Another limitation is related to the journals from which analyzed articles were selected. Although selected journals use rigorous review procedures and selection criteria and publish only high-quality articles, research results and conclusions can be enriched by including articles from various journals.

4. Recommendations for the Future Research

Based on the results of the analysis, a number of recommendations can be defined. Recommendations that should be followed if someone wants to achieve valuable results for theory and practice are:

1) despite a growing number of studies that examine job satisfaction from different aspects, particular attention can be paid to satisfaction factors that would be defined and classified on the basis of unique criteria and individual countries in order to obtain comparative data on job satisfaction;
2) in order to avoid partiality in research, it would be desirable to conduct unified studies of most factors and their influence on job satisfaction, as well as to study the impact of job satisfaction on other factors, which would provide a comprehensive picture of the observed causation;
3) a careful measurement of the investigated phenomenon, replication and aggregation of some of the existing standardized measurement scales, whose reliability and validity has already been examined, could significantly enhance the entire research design of the job satisfaction problem;

4) in addition to independent and dependent variables, a greater number of control variables could be included in research due to the complexity of job satisfaction concept and specific role that such variables have in quantitative research design, which would further clarify the investigated relationships.

CONCLUSION

The subject of this paper was the analysis of scientific articles related to the concept of job satisfaction in order to obtain a basic insight into the given topic, to discover more detailed information about the subject of research and to gather necessary information for the future more complex research of the descriptive-causal character. The articles included in the analysis were selected by a convenience sample and special attention was paid to their methodological and conceptual aspects, as well as to the analysis of scales used to evaluate job satisfaction.

Based on the results, several basic conclusions can be made. First, regarding the methodological aspects of analyzed articles, it can be noticed that most studies about job satisfaction use a quantitative methodology while qualitative and mixed qualitative-quantitative studies are rare. In accordance with the nature of the research, authors use different methodological techniques and instruments, most often using an email survey. When it comes to research subjects, it can be concluded that job satisfaction is being studied in various industrial sectors and countries where most studies are focused on specific groups of workers, workers from a particular organization or workers employed by a particular employment agency. The response rate is quite high in the observed type of research and depends on the country where the empirical research is conducted.

Second, regarding the conceptual aspects job satisfaction articles, it can be noticed that authors observe job satisfaction in two ways, as an independent or as a dependent variable, where different authors use different operationalizations of dependent, independent and controllable variables in their studies. As a result, numerous causes and consequences of job satisfaction can be found in the existing literature. Also, authors usually use a large number of different control variables in their research.

Finally, when it comes to job satisfaction scales, it can be noticed that different authors identify different aspects, factors or determinants of job satisfaction. For this reason, job satisfaction scales are created as scales with one item or as multiple item scales where most authors consider that Likert-type scale should be used for evaluation of defined items. Also, characteristic of job satisfaction articles is the replication of scales from previous studies which is justified by the fact that the scales used in previous research have already been proven as reliable and valid instruments for the assessment of job satisfaction.

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SKALE ZA OCJENJIVANJE ZADOVOLJSTVA POSLOM – ANALIZA ODABRANIH NAUČNIH ČLANAKA

Iako je koncept zadovoljstva poslom istražen i analiziran u brojnim studijama, može se uočiti da je ovaj koncept proučavan na različite načine. Upravo iz ovog razloga, predmet istraživanja u ovom radu predstavlja skup različitih naučnih članaka u kojima se analizira zadovoljstvo poslom. Kako je osnovni cilj ovog rada sticanje uvida u koncept zadovoljstva poslom, istraživanje je sprovedeno na prigodnom uzorku naučnih članaka. Rezultati istraživanja pokazuju da autori u svojim istraživanjima koriste različite pristupe za definisanje, proučavanje i ocenjivanje zadovoljstva poslom. Kao rezultat, u postojećoj literaturi mogu se pronaći različite metodologije, faktori zadovoljstva poslom i skale koje su dizajnirane za ocenjivanje nivoa zadovoljstva poslom.

Ključne reči: *zadovoljstvo poslom, faktori zadovoljstva poslom, ocenjivanje zadovoljstva poslom, skale zadovoljstva poslom*

FACTA UNIVERSITATIS
Series: **Economics and Organization** Vol. 15, N° 4, 2018, pp. 379 - 392
https://doi.org/10.22190/FUEO1804379R

Preliminary Communication

INTERNALIZING ENVIRONMENTAL EXTERNALITIES IN CEMENT INDUSTRY: CASE STUDY FOR THE REPUBLIC OF SERBIA AND SELECTED NEIGHBORING COUNTRIES

UDC 691.54:061.5(497.11)

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Abstract. *The paper provided detailed analysis and calculations of external costs in cement industry of the Republic of Serbia and neighboring countries for period of 2010-2016. Internalization of externalities represents a huge challenge for every policy maker in environmental area that has the obligation to calculate the impact of economy on the environment. In fact, many parts of economy have far greater impact on environment than it can be expected and that is one of the reasons for including external costs in total costs of companies. Cement industry is among industries that emit pollutant particles in the air and cause serious environmental problems to local communities. The principal idea of paper is to evaluate external costs of cement production plants in Republic of Serbia, Bulgaria, Hungary and Romania, so in the end rightful solutions can be provided in order to neutralize or minimize environmental impact of cement factories. For this kind of analysis, EcoSense LE (Light Edition) software was used. Analysis of external costs in cement industry will help in expansion of knowledge about internalizing environmental externalities in analyzed countries, where lack of similar studies does not help in solving the problem of environmental externalities in these countries.*

Key words: *environmental externalities, the Republic of Serbia, cement industry, sustainable development, internalization of externalities, external costs*.

JEL Classification: Q51, Q52, Q53.

Received July 28, 2018 / Revised November 02, 2018 / Accepted November 05, 2018
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INTRODUCTION

Pollution can be defined as a product of certain economic activities with harmful effects to the environment. Although it is harmful, it is also inevitable, since it appears during the production of goods and services with economic value. Therefore, efficiency principle is important and producers should go for gaining higher utility from production process with minimizing production effects on the environment. For every kind of pollution, utility should be calculated in order to start with appropriate actions for solving pollution problems. Before considering any actions, producers and creators of environmental policies should ask themselves two questions. "First, what level of pollution is acceptable from social stance, since every society emits some kind of pollution? Second, how can we control and reduce pollution to acceptable level?" (Harris, 2009, p. 357)

Since there is no production without any kind of pollution, external costs should be recognized by market and become vital part of every market analysis. Most of the economic subjects refuse to include external costs in their balances due to increase of overall costs and possible legal consequences to their businesses. For all producers, the main goal is to gain profit and so they give advantage to economic activities instead of environmental activities. Sometimes optimal economic level of quality is not the best one from environmental aspect, which means economic optimum is not same as environmental optimum. "For instance, from environmental aspect optimal can be total elimination of pollution, while from economic aspect optimal is that point where marginal costs from reducing pollution equal marginal utilities from reducing pollution" (Bošković & Radukić, 2011, p.73)For reaching the right decision about optimal model, producers and policy makers should consider using internalization of externalities, since it is one of the most effective and efficient ways to evaluate impact on the environment.

External costs have origin from different kind of industries such as car industry, chemical industry, tobacco industry, textile and rubber industry. These industries produce huge external costs that are usually not included in total costs of companies. In some countries external costs are up to 5% of country's GDP, which only indicates that external costs are not treated in a proper manner (Hinšt, 2007). Higher amount of emitted pollutant particles not just cause increase in external environmental costs of many countries, but also cause many environmental problems that countries have to deal with. Industry has joint responsibility with traffic and intensive use of non-renewable resources for the high rate of pollution. Problem lies in irresponsible behavior of industries that do not pay attention to environmental issues and continue with use of old technologies that pollute the environment. Additionally, absence of appropriate framework for pollution management is an obstacle for many industries that want to change approach towards the environment (Lucas & Noordewier, 2016).

Cement industry represents a vital part of every national economy, but it is also source of environmental pollution in many countries. All countries with cement industry face this problem, with some of them taking precautions, while some do not do anything at all. For developing countries cement industry can become a serious burden, if they do not recognize any environmental impact and react immediately. In areas such as Western Balkans problem is not just in providing solutions but also in calculating external costs, since methodology for calculating external costs is still not well developed in Western Balkans. Using the EcoSense LE software, the authors will try to calculate external environmental costs in cement industry

of Western Balkan countries and provide adequate solutions for reducing pollution that comes from cement industry. Beside introduction and conclusion, the paper has three more chapters. The first chapter brings brief literature review about internalization of externalities with special emphasizes on internalization in cement industry. In the second chapter, data about cement industry of Serbia and neighboring countries will be presented with methodology that will be used for conducting research. The third chapter gives detailed analysis of external environmental costs in cement industry of analyzed countries with providing and testing several more scenarios for analyzed countries.

1. LITERATURE REVIEW

Over last three decades, the interest for externalities has started to grow with every new market failure. In the beginning, most of the authors were focused on economic and social aspect of externalities, but later the focus of interest switched to environmental externalities. Although many authors knew about the term externality, studies and research about externalities have started to spread by the end of the 20th century when group of authors laid the foundations for expanding externality theory (Dasgupta & Heal, 1979; Dasgupta & Maler, 1991; Gupta & Prakash, 1992; Bergstorm, 1993; Gupta & Prakash, 1993). Authors have gone deeper into externality theory by marking off specific characteristics of externalities and defining the path for internalizing externalities. Meanwhile, authors have started to get interest in external environmental costs and they provided some detailed studies about environmental externalities (Koomey & Krause, 1997). By calculating external costs, conditions for redesigning many polluting industries were created.

Studies for environmental externalities cover different areas such as traffic, industry, utility services, foreign direct investments and climate changes (Fahlen & Ahlgron, 2010; Sanga & Muntagana, 2016; Štreimikene, 2017; Wang & Li, 2018). In all these areas the authors have first found the source of problem; then they calculated external costs and in the end provided solutions for environmental externalities. Since environmental externalities represent a global problem, many individuals and institutions from around the world have started to deal with it and they have given their contribution in solving environmental externality problem. With spreading the number of global researches, potential solutions to environmental externalities increased with choosing right ones for appropriate situations. Also, many companies have shown interest in solving environmental externalities, so they have started to change their business plans and strategies in order to become more eco–friendly. Changing business habits of companies requires huge changes in management and planning, so there were numerous studies with intention of helping companies to reorganize their businesses (Fierro et al., 2008; Libecap, 2014; Lucas & Noordewier, 2016). These studies helped some companies to change their views towards the environmental issues and to become active participants in changing global environmental awareness. By switching to environmental issues, the door was opened for studies that consider environmental accounting as a crucial part of environmental management in public and private companies (Fahlen & Ahlgren, 2010; Adler & Volta, 2016; Eidelwein et al. , 2018). The goal of introducing environmental accounting was to simplify procedures for discovering possible environmental externalities and to help organizations with planning future environmental

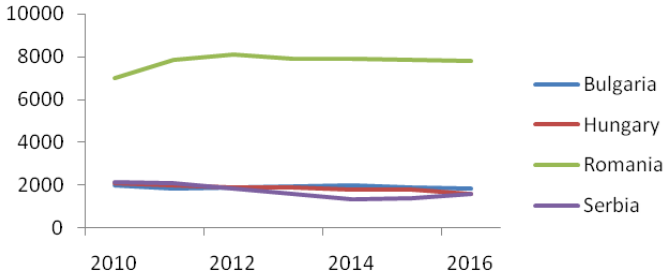
strategies. Another goal was to build open access for all stakeholders to be more familiar with organizations' activities in environmental area.

Although internalization of externalities was introduced with very positive intensions, group of authors opposed this by proclaiming internalization as „ insufficient for solving externality problem" (van den Bergh & Grazi, 2010; Bithas, 2011; Berta & Bertrand, 2014; Weitzman, 2015). Authors found that in the real world where externalities exist, their internalization cannot lead to the sustainability due to specific form of externalities. Environmental externalities are a big problem for solving, since they appear under different conditions and produce effects that sometimes are not measurable.

Cement industry is one of the most important industries, since many other industries use cement as a raw material for their own productions. For a very long time, global cement industry has been growing constantly, which certainly had some effects on both economy and environment. Some studies showed that global cement industry had significant share in global carbon dioxide (CO_2) emissions (Benhelal et al. , 2013; Barros et al. , 2014). Authors showed that 5–7% of global CO_2 emissions were caused by cement plants. Also, for producing one tone of cement, the plant emits about 900 kg of CO_2 to the atmosphere. This is one of the reasons why some cement plants have started to change their technologies and production processes (Ishak & Hashim, 2015; Kajaste & Hurme, 2016). Some cement plants were obliged by law to start with investments into sustainable technologies or to face with penalties for their activities. This brought to allocation of technologies from developed to developing countries where cement companies have continued with their production process. On the other hand, in some areas like China, EU and Switzerland, the cement industry has a totally new image – more sustainable (Branger & Qurion, 2015.; Zhang et al. , 2015; Jibran et al. , 2017). In these areas, cement industry represents a good example of implementing sustainable technologies for achieving not just better economic results, but also for improving environmental performances on micro and macro level. Many cement plants can still produce the same amount of cement without harming the environment.

2. RESEARCH DATA, METHODOLOGY AND HYPOTHESES

The subject of analysis is cement industry and cement plants that operate in Serbia, Bulgaria, Hungary and Romania. Cement industry in these countries has a very long tradition and roots leading back to the middle of the XIX century. At this area 20 cement plants run their business and they experienced many transformations from their founding until today. These cement plans changed their technologies, markets, owners but their primary task never changed and it was the production of cement. As for cement production, it is similar like in the rest of the world and includes the following phases: extraction of raw materials, preparation of raw materials (including grinding and mixing), warehousing of meal, baking of raw material meal, maturing of clinker, milling of clinker into cement, warehousing of cement, packing and dispatch activities. Like in the rest of the world, cement plants in Serbia and selected neighboring countries produce hydraulic cement, which is later being used in construction industry, but also in mining and energetic sector. Technologies in cement plants followed changes in global cement industry with delayed effects that had impact on short run activities of cement plants in Serbia and selected neighboring countries.



Graph 1 Cement production in Serbia and selected neighboring countries 2010-2016 (in thousand tones)
Source: Statistical offices of Bulgaria, Hungary, Romania and Serbia

Based on graph 1, the cement production in analyzed countries had expressed fluctuations in 2010-2016 timeline. Among the analyzed countries Romania has the highest cement production (8,03 million tons), although from 2010 to 2016 the cement production in Romania was reduced for 0,86%. Other countries have significantly smaller production than Romania and the most of them have decline in cement production. Among these countries Serbia had the highest decline in analyzed period (43,66%).

Table 1 Total emmisions of NO_x, SO_2 and PM_{10} in cement industry of Serbia and selected neigboring countries (in tons)

	2010	2011	2012	2013	2014	2015	2016
NO_x	10637	10456	10579	10397	10178	9939	9925
SO_2	10,29	9,88	9,93	9,55	9,79	9,43	10,25
PM_{10}	96	97	100	83	88	89	93

Source: Sustainable reports of analyzed cement plants

Environmental issue has become one of the most important areas for many cement plants due to their impact on the environment. Like their competitors around the world, cement plants in Serbia and selected neighboring countries emit particles that can harm environment very seriously. Based on the table 1, the emission of nitrate oxides (NO_x) is very high and it was the highest in 2010, when it reached 10.637 tons. Since 2012, the emissions of NO_x have started to decline, but they are still very high at the end of 2016. As for the others, air is polluted most by the particulate matter (PM10), which from 2012 began to decline, while emissions of sulfur dioxide (SO_2) are also emitted from analyzed cement plants but they have the lowest emissions.

Table 2 Total emmisions of NO_x, SO_2 and PM_{10} in cement industry of Serbia (in tons)

	2010	2011	2012	2013	2014	2015	2016
NO_x	1923	1873	2104	1909	1753	1664	1739
SO_2	1,78	1,39	1,32	1,12	1,40	1,23	2,09
PM_{10}	13	10	9	9	8	9	14

Source: Sustainable reports of analyzed cement plants

Based on table 2 every kind of analyzed polluting particles increased from 2010 to 2016, with the exception of NO_x. All cement plants in Serbia passed through several changes in organizing and production activities and some of them even changed owners which all had impact on production and amount of polluting emissions.

Table 3 Total emmisions of NO_x, SO_2 and PM_{10} in cement industry of Bulgaria (in tons)

	2010	2011	2012	2013	2014	2015	2016
NO_x	2236	2117	2009	2123	2085	1968	1909
SO_2	1,88	1,97	2,05	2,01	1,99	1,91	1,86
PM_{10}	16	18	20	19	15	14	13

Source: Sustainable reports of analyzed cement plants

Bulgarian cement plants had a reduction in emissions of polluting particles in analyzed period (table 3). Significant reductions were in emissions of NO_x which was mainly due to the strict control of environmental bodies of EU. On the other hand, Bulgarian cement plants have reduced their emissions by taking participation in European Union Emission Trading Scheme which allowed companies from Bulgaria to take their places recently.

Table 4 Total emmisions of NO_x, SO_2 and PM_{10} in cement industry of Hungary (in tons)

	2010	2011	2012	2013	2014	2015	2016
NO_x	1957	1903	1876	1831	1822	1807	1795
SO_2	1,65	1,60	1,56	1,52	1,55	1,49	1,47
PM_{10}	19	17	17	15	16	14	13

Source: Sustainable reports of analyzed cement plants

Hungarian cement plants had a significant reduce in cement production from 2010 to 2016, which had impact on emissions of polluting particles. Based on table 4, it can be seen that emissions of NO_x, SO_2 and PM_{10} in cement industry of Hungary were reduced. At the same time all of cement plants in Hungary have started to use technologies that improve environmental performance of places where plants are located. These technologies are based on capturing emissions of polluting particles, improving the efficiency of resources and creating conditions of establishing circular economy principles inside cement plants in order to minimize waste and polluting effects.

Table 5 Total emmisions of NO_x, SO_2 and PM_{10} in cement industry of Romania (in tons)

	2010	2011	2012	2013	2014	2015	2016
NO_x	4521	4563	4590	4534	4518	4500	4482
SO_2	4,98	4,92	4,97	4,90	4,85	4,80	4,83
PM_{10}	48	52	54	50	49	51	53

Source: Sustainable reports of analyzed cement plants

Among all analyzed countries Romania is the biggest producer of cement, which had an impact on increasing the level of pollution caused directly from cement plants in Romania. Based on table 5 only PM_{10} emissions increased, while the emissions of other polluting particles were reduced. In total, Romanian cement plants give crucial contribution to overall

emissions of polluting particles among the analyzed countries and if one needs to start somewhere with measures for improving environmental performance, it must be in Romania. Although Romania places huge efforts in reducing the overall impact of cement plants emissions, several obstacles stand in the way. First of all, Romanian cement is one of the most demanded ones in the world and it is one of the leading export products of Romania. Second, although law authorities try to reduce the level of emissions by implementing laws, on the other hand plants owners invest very little in innovative and clean technologies which can additionally help in improving environmental conditions. Third, Romanian participation in carbon trading markets and schemes is low and so it must be improved in the following years in order to reduce total emissions. After overcoming these obstacles Romanian cement industry can make huge efforts in reducing overall emissions of polluting particles in Romania.

Cement plants are important parts of Western Balkans national economies, but on the other hand they have strong impact on the environment, which is not measured through external environment costs. By emitting polluting particles in the air, cement plants can cause serious diseases or harm fertile land and in the end they can avoid legal consequences if there is no appropriate environmental legislature. Every implementation of environmental legislature should be followed by internalization of external environmental costs in order to provide efficient and effective penalty system for all subjects that pollute environment. Internalization of environmental externalities is also a basis for introducing some economic instruments in environmental area that will be more focused on solving environmental problems than on increasing budget of the state (Magdalinović – Kalinović & Radukić, 2016). Internalization of external environmental costs should be the first step in optimizing economic and environmental goals through choosing right social and business model for the whole society that is facing some sustainability difficulties (Radukić et al. 2014).

Basic methodology for estimating external costs in cement industry of Western Balkans has been taken over from the European Commission project ExternE – External Cost of Energy, methodology 2005 Update, developed by the Institute of Energy Economics and Rational Use of Energy (IER), University of Stuttgart. The developed methodology has been called Impact Pathway Approach (IPA) and it starts with activities of polluters and it is finished with monetary amount of damage. In the middle of this approach are emissions of the polluters, immissions and expected impact on health or on environment. For purpose of the project, the University in Stuttgart developed the software EcoSenseWeb V1.3 that carefully followed defined methodology (Preiss & Klotz, 2008). This software integrates atmospheric pollution dispersion models with receptor databases (population, land–use, infrastructure and ecosystem) for whole Europe. Based on the level of emissions, software determines spatial distribution of emissions, expected negative consequences to health and environment and estimated monetary amount of damage. EcoSenseWeb V1.3 was primarily designed for estimating external environmental costs in electricity production, but it has been modified to support other industries that have impact on environment.

EcoSenseWeb V1.3 contains all relevant data and models for estimating distribution of pollution in air, water or land with simulating atmospheric pollution dispersion for any kind of pollution in Europe. For simulating different models and scenarios primary sources of pollution are being used (in radius 10 x 10 km from the source of pollution) through Gaussian model of local dispersion. Typical primary sources of pollution in cement industry are NO_x, SO_2, PM_{10} and they are all considered in analysis for Western Balkans.

EcoSenseWeb V1.3 can also estimate pollution impact on health, agricultural areas, land, water, biodiversity and infrastructure since it contains data about receptors in all administrative regions of Europe. Database contains data about population, agricultural crops, list of material goods, meteorological, ecosystem and land–use data. For estimating external environmental costs population density and ecosystem structure are considered. For estimating pollution impact on people's health EcoSenseWeb V1.3 uses Concentrate–Response Function (CRF) that can lead to answers about primary pollution sources impact on people's health. The highest shares in external costs is taken by the costs that are the consequences of harmful impact of pollution on people's health, and they represent an important part of analysis. Although EcoSense LE cannot provide detailed analysis like EcoSenseWeb V1.3, it can help in estimating external environmental costs that were caused by pollution.

For the purpose of this research the following hypotheses have been tested:

H1: Every significant increase in cement production brings higher external environmental costs for cement plants in Serbia and selected neighboring countries.

H2: Costs of health impact have the highest share in external environmental costs of cement plants in Serbia and selected neighboring countries.

For testing the hypotheses, the software EcoSense LE was used. This software is a reduced version of EcoSenseWeb V1.3 which is available to students and scientific workers for scientific purpose only. For calculating external costs of cement plants, input of the emissions of polluting particles is required (in this case NO_x, SO_2, PM_{10}). After inputting values of emissions EcoSense LE will calculate the exact value of external costs in the required place through available GIS and database.. For this research, the input data are values of polluting particles in sustainability report of analyzed cement plants, while EcoSense LE will provide additional data like impact on health, agricultural lands and ecosystem. In order to see the impact on health, agricultural lands and ecosystem EcoSense LE provides several interesting variables through their monetary value. These variables are: costs of mortality, costs of reducing yields of agricultural crops or costs of damaging biodiversity. Costs of mortality include costs that caused mortality on some territory. These costs include costs of medicaments and medical care and other accompanying costs for persons that were infected by pollution and had to look for rightful treatment. Costs of reducing yields of agricultural crops include all costs that lead to reducing quality of agricultural land from infecting the land to treating it and to potential loss of agricultural workers. Costs of damaging biodiversity include all costs that were accompanied by changing conditions in biodiversity due to increased pollutions. Changes in number of plant or animal species, reducing green surfaces and trees, producing disasters like acid rains are included in costs of damaging biodiversity and they must all be taken very seriously.

3. FINDINGS AND DISCUSSION

The central part of research is oriented towards the estimation of external environmental costs, but there are other elements of research that should be explained. First, Disability–Adjusted Life Year (DALY) represents value that quantifies the burden of disease from mortality and morbidity. It shows the number of years lost due to illness, disability or early death and it also express number of "healthy" years that population lost due to pollution. Second, Potentially Disappeared Fraction (PDF) expresses total area that is under the impact

of pollution, but sometimes PDF can have even wider impact although calculations say something else.

Table 6 Estimation of external environmental costs in cement industry of Serbia for 2010 – 2016

	2010	2011	2012	2013	2014	2015	2016
Health impact							
DALYs(Mortality)	166,60	162,23	182,21	165,32	151,85	144,13	150,72
DALYs(Morbidity)	69,23	67,41	75,70	68,69	63,08	59,89	62,63
DALYs(Total)	235,83	229,64	257,92	234,01	214,93	204,02	213,35
Monetary value (in millions of €)	19,71	19,20	21,56	19,56	17,97	17,06	17,84
Impact on crops and materials							
Crop loss (in hundreds of €)	782,63	762,29	856,31	776,95	713,46	677,23	707,75
Material loss (in hundreds of €)	247,54	240,99	270,63	245,52	225,59	214,10	224,02
Impact on ecosystem							
PDFs (in millions of m2)	7,28	7,10	7,97	7,24	6,64	6,31	6,59
Monetary value (in millions of €)	4,30	4,18	4,70	4,27	3,92	3,72	3,89
Total costs (in millions of €)	25,05	24,39	27,40	24,86	22,83	21,67	22,66

Source: Authors' calculations

Based on table 6 several trends can be seen. Until 2012 all values have been declining, but in 2012 they all reached higher values. For instance, total DALY was 257,92, health impact costs were 21,56 million €, crop losses were 856,31 hundred €, while total external environmental costs were 27,40 million €. From 2012 all external environmental costs have started to decline and in 2015 they were at minimum (21,67 million €). In 2016 all costs have started to grow again, which will bring new environmental problems. In the analyzed period the overall external environmental costs for Serbian cement plants were 168,86 million €. By comparing production of cement and total external costs average costs per ton can be pulled out. In the case of Serbia these average external costs in the analyzed period were 0,07 €/t.

Table 7 Estimation of external environmental costs in cement industry of Bulgaria for 2010 – 2016

	2010	2011	2012	2013	2014	2015	2016
Health impact							
DALYs (Mortality)	109,41	103,60	98,32	103,89	102,03	96,31	93,42
DALYs (Morbidity)	36,47	34,54	32,79	34,64	34,00	32,10	31,13
DALYs (Total)	145,88	138,14	131,11	138,53	136,03	128,41	124,55
Monetary value (in millions of €)	11,95	11,32	10,74	11,35	11,15	10,52	10,21
Impact on crops and materials							
Crop loss (in hundreds of €)	1.980,50	1,875,10	1,779,42	1,880,41	1,846,76	1,743,13	1,690,67
Material loss (in hundreds of €)	195,15	184,80	175,41	185,33	182,01	171,81	166,66
Impact on ecosystem							
PDFs (in millions of m^2)	1,16	1,09	1,04	1,10	1,08	1,02	0,99
Monetary value (in millions of €)	0,68	0,64	0,61	0,65	0,64	0,60	0,58
Total costs (in millions of €)	14,81	14,03	13,31	14,07	13,81	13,04	12,65

Source: Authors' calculations

Table 7 shows that Bulgarian cement plants had a decline in external environmental costs until 2013, when they increased to 14,07 million €. From 2013 external environmental costs have started to fall again and in 2016 they were 12,65 million €. As in the case of Serbian cement plants, health impact costs were very high, but here crop loss costs were significantly higher than in Serbia and in 2013 they reached 1,88 million €. It is also interesting that although total external environmental costs are lower than in Serbia, they are very high since they have covered less area than in case of Serbian cement plants. Total external environmental costs for analyzed period are 95,72 million €. As for the average external costs per produced ton of cement, they were 0,14 €/t.

Table 8 Estimation of external environmental costs in cement industry of Hungary for 2010 – 2016

	2010	2011	2012	2013	2014	2015	2016
Health impact							
DALYs (Mortality)	189,95	185,68	183,05	178,66	177,78	176,31	175,14
DALYs (Morbidity)	79,16	76,96	75,87	74,03	73,67	73,06	72,57
DALYs (Total)	270,11	262,64	258,92	252,69	251,45	249,37	247,71
Monetary value (in millions of €)	22,48	21,86	21,55	21,03	20,93	20,75	20,61
Impact on crops and materials							
Crop loss (in hundreds of €)	1.739,37	1.691,38	1.667,38	1.627,39	1.619,39	1.606,05	1.595,39
Material loss (in hundreds of €)	348,28	338,67	333,86	325,85	324,26	321,57	319,43
Impact on ecosystem							
PDFs (in millions of m^2)	4,56	4,43	4,37	4,26	4,24	4,20	4,18
Monetary value (in millions of €)	2,69	2,61	2,58	2,52	2,50	2,48	2,47
Total costs (in millions of €)	27,26	26,50	26,13	25,50	25,37	25,16	24,99

Source: Authors' calculations

Unlike cement plants in Serbia and Bulgaria, Hungarian cement plants have only downward trend for all analyzed values. Health impact costs are very high in Hungary and they are even higher than in Serbia and Bulgaria. Crop loss costs were 1,7 million € in 2010, while in 2016 they were 1,5, which means that crop loss costs were reduced for 9,02%. External environmental costs were the highest in 2010 (27,26 million €), but in next six years they were reduced for 9,08% and they were 24,99 million € in 2016. Total external environmental costs for Hungarian cement plants in analyzed period were 180,91 million €, which is higher than in Serbia and Bulgaria. Average external costs per ton of produced cement in Hungary are 0,07 €/t, which is the same as in Serbia and less than in Bulgaria.

Cement industry of Romania has the highest production among the analyzed countries, but it also has huge impact on the environment. Based on table 9, two trends of environmental impact can be seen. Until 2012 cement production grew in Romania, but also external environmental costs. Among analyzed countries Romania had the highest costs from health impact (31,53 million € in 2012) and crop loss (3,13 million € in 2012). From 2012 all external costs have started to decline and in 2016 they were 36,75 million €. Total external environmental costs for Romanian cement plants in analyzed period were 259,98 million €, which is higher than in other analyzed countries. Compared to other analyzed countries, Romania has the highest external costs per ton of produced cement and the average costs in analyzed period were 0,21 €/t.

Table 9 Estimation of external environmental costs in cement industry of Romania for 2010 – 2016

	2010	2011	2012	2013	2014	2015	2016
Health impact							
DALYs (Mortality)	279,54	282,13	283,80	280,34	279,35	278,23	277,12
DALYs (Morbidity)	103,72	104,71	105,35	104,03	103,66	103,27	102,87
DALYs (Total)	383,26	386,84	389,15	384,37	383,01	381,50	379,99
Monetary value (in millions of €)	31,05	31,34	31,53	31,14	31,03	30,91	30,79
Impact on crops and materials							
Crop loss (in hundreds of €)	3.114,03	3.134,52	3.164,55	3.122,98	3.111,96	3.099,56	3.087,17
Material loss (in hundreds of €)	598,89	604,41	607,99	600,57	598,44	596,05	593,68
Impact on ecosystem							
PDFs (in millions of m^2)	3,90	3,93	3,96	3,91	3,90	3,88	3,87
Monetary value (in millions of €)	2,30	2,32	2,33	2,31	2,30	2,29	2,28
Total costs (in millions of €)	37,07	37,41	37,64	37,17	37,04	36,90	36,75

Source: Authors' calculations

CONCLUSION AND RECOMMENDATIONS

Cement industry has an important role in every national economy and it is also the case with Serbia, Bulgaria, Hungary and Romania. In the last two decades cement plants in Serbia and selected neighboring countries were facing severe challenges that had impact on business environment of cement plants. All cement plants were forced to change the way they operate their businesses in order to stay competitive and avoid possible shut down. Although cement plants have modified and upgraded their business activities, they still have to make huge effort in solving environmental problems that they are causing.

The analysis for 2010 – 2016 showed that cement plants in Serbia and neighboring countries caused total external environmental costs of 705,47 million € from emission of polluted particles. Cement plants in Romania and Serbia cause the highest pollution and therefore these countries have the highest external environmental costs. Serbia had an increase in cement production in 2012 and in 2016, Bulgaria had an increase in 2013, while Romania had an increase in 2011 and 2012, which were all followed by increase in external environmental costs. Therefore, H1 hypothesis can be accepted. As for the H2 hypothesis, it can also be accepted since health impact costs are very high in all analyzed countries and they have the highest share in total external environmental costs of all countries. High health impact costs also show how risky cement production can be to the health of nearby population and it also reduces "healthy" years of population through DALY. Crop loss costs are also much higher in all analyzed countries and they can have serious effects on devastating quality agriculture lands which can only bring new problems to local population.

Measuring external environmental costs can help in providing appropriate solutions to environmental challenges that many areas are facing. By knowing the exact costs, appropriate planning and measures can be provided in order to improve environmental performances of area that is contaminated with pollution. Cement plants should think about investing into new technologies that do not pollute environment and that will help in

improving business performances. This means that cement plants should think more about sustainable strategies that will bring benefits to them. Cement plants should also invest in environmental education of workers or hire environmental professionals that will take care about environmental activities. Also, it is important that there is good cooperation between cement plants, local population and legal authorities. Legislature must define laws with strict penalty policy that will force polluters to behave more sustainably and pay more attention to environmental issues. Providing appropriate software for tracking pollution will be a step forward. This software can be used by health or agriculture institutions to see the level of pollution, count external costs and inform legal authorities about polluters' activities. Cement plants can think about emissions market that already exists in Europe and trade with emissions, which will help in reducing pollution, but this can also help cement plants to get additional assets for improving their businesses through sustainable funding programs since they can be recognized as companies that care about environmental awareness. Cement plants in the Republic of Serbia and neighboring countries should think more about their environmental policies and consider their future directions, because sustainability issue will become more important in the future and so it is better for all them to start right now from remodeling their business which will help cement plants to be prepared for future challenges that they will be facing.

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INTERNALIZOVANJE EKOLOŠKIH EKSTERNALIJA U INDUSTRIJI CEMENTA: STUDIJA SLUČAJA ZA REPUBLIKU SRBIJU I ODABRANE SUSEDNE ZEMLJE

U radu je izvršena analiza, ali i kalkulacija eksternih troškova u industriji cementa u Republici Srbiji i susednim zemljama za period 2010 – 2016. Internalizovanje eksternalija predstavlja veliki izazov za sve donosioce odluka, a naročito za one u oblasti zaštite životne sredine koji su u obavezi da na adekvatan način procene uticaj ekonomskih aktivnosti na životnu sredinu. U suštini, mnogi segmenti ekonomije imaju daleko veći uticaj na životnu sredinu, nego što se to može zamisliti i zato je neophodno da eksterni troškovi postanu sastavni deo ukupnih troškova preduzeća koja zagađuju životnu srednu. Industrija cementa spada u red industrija koje emitiju štetne emisije zagađujućih materija u vazduh čime znatno smanjuju kvalitet vazduha i stvaraju problem lokalnom stanovništvu. Osnovna ideja rada je da se procene ekološki eksterni troškovi u industriji cementa Republike Srbije, Bugarske, Mađarske i Rumunije kako bi se ponudila adekvatna rešenja za neutralizovanje ili minimizaciju uticaja cementnih pogona na životnu sredinu. Za potrebe istraživanja korišćen je softver specijalizovan za zagađenja u industriji pod nazivom EcoSense LE (Light Edition). Analiza eksternih troškova u industriji cementa doprineće širenju znanja o ekološkim eksternalijama u industriji cementa, što će naročito biti od značaja za analizirane zemlje u kojima nedostatak sličnih istraživanja u velikoj meri otežava process rešavanja ekoloških eksternalija.

Ključne reči: *ekološke eksternalije, Republika Srbija, industrija cementa, održivi razvoj, internalizovanje eksternalija, eksterni troškovi*

FACTA UNIVERSITATIS
Series: **Economics and Organization** Vol. 15, N° 4, 2018, pp. 393 - 404
https://doi.org/10.22190/FUEO1804393M

Preliminary Communication

THE DEVELOPMENT EFFECTS OF THE MONETARY AND FISCAL POLICY IN CONTEMPORARY CONDITIONS

UDC 336.02
338.23:336.74

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Abstract. *One of the biggest problems in economic theory has always been coordination of different elements of economic policy, especially monetary and fiscal policy. In the past, there have been a few theories emphasizing one of them, but in contemporary conditions it is a fact that the only right answer is in coordinated conducting of all of them. Therefore, every measure in monetary policy has to be followed by particular action in fiscal policy and the other way around. The question remains whether fiscal or monetary policy should have the priority in decision making and is there a pattern to follow when it comes to creating economic policy. Empirical data are the most purposeful source for answering these questions, and therefore we will use variables from four different countries from the last fifteen years and try to find the connection between monetary and fiscal policy and the standard of living.*

Key words: *Economic policy, Monetary policy, Fiscal policy*

JEL Classification: E52, E62

INTRODUCTION

It seems that the world has not managed to propel economic activity since the last economic crisis of 2008, and that the demand is still very low. What has led to this is a combination of economic and political factors. First of all, terrorist attacks, which have represented the Sisyphus's boulder since the beginning of the twenty-first century, have made business and political risks extremely high. Secondly, banking systems all over the world need more time to build the trust they had before the crisis. Thirdly, the new

Received March 26, 2018 / Revised June 27, 2018 / Revised September 27, 2018 / Accepted October 15, 2018
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technological revolution is getting more and more intense and creating high structural unemployment, which will, almost certainly, last for a few more years. Japan has been on the top of the production function for almost twenty years now, and they still cannot find a way to move it upwards. America seems blinded by politics, and deals little with economics. Russia is struggling with the EU sanctions, and the rest of the world is struggling with, in the words of the Nobel Prize winner, Joseph Stiglitz, globalization and its discontents. Only China keeps positive trends in every single parameter, which is not surprising, having in mind that China entered the global flows very carefully and under its own conditions. On the other hand, no other country has had enough power to do the same.

The usual recipe in similar situations is a cheap money policy, which should drive the money out of the banks, and make people and firms invest, finally propelling economic activity. However, a cheap money policy has already been led in most parts of the world since the end of the last crisis, but without any results. Demand has not reacted. In today's neoliberal world, it would be extremely difficult to admit that Keynes was right, and that the states would have to do their parts in getting out of the crisis. Whether that will be a necessity, or whether the market will eventually find its way out, only time will tell. The hypothesis that we will try to prove or confute is that the fiscal policy will have to bear the brunt in contemporary conditions.

1. METHODOLOGY

Having in mind that structural unemployment is a very serious issue today, not only in underdeveloped and developing countries, but also in some developed ones, GDP (even GDP per capita) is no longer a fair representative of development in certain countries. Therefore, the main parameter in this research, which is also a dependent variable, is the *GDP/Unemployment rate of workforce*. Monetary aggregate M2 and interest rate, as representatives of monetary policy, and government expenditures, as a representative of fiscal policy, will be independent variables. We will take into consideration twelve randomly picked countries (an equal number of developing and developed countries), and the data from 2000 to 2015. These twelve countries are firstly grouped in four categories regarding the GDP/Unemployment rate of the workforce, using the cluster analysis, after which we chose one from each cluster, and then, using multiple regression, the contribution to a dependent variable is determined for every independent variable.

2. COMPLEMENTARY ACTION OF FISCAL AND MONETARY POLICY

It is clear that in today's dynamic conditions, it is impossible to exclusively use recommendations of the certain schools of economic policy, as was the case in the twentieth century. Therefore, a coordinated management of all elements of economic policy, and especially the monetary and fiscal policy, is a necessity. The most important reason for this is that these two policies have clear effects on one another. It is impossible to correct the fiscal policy without repercussions on the aggregates of monetary policy, or the other way around.

With its action, the fiscal policy can upset the monetary one (Sergent, Wallace, 1981). Some potential manifestations of this interference are that, in conditions of low fiscal space, an expansive fiscal policy may create a budget deficit, which undoubtedly affects the

monetary policy. In case the government decides to monetize the budget deficit, both the monetary and fiscal policies become expansive, which is allowed only during serious recessions, and only for a short period of time. In other cases, the effect is entering an inflationary spiral. Another option for the government is to finance the deficit by public debt, which is also a trigger for inflation, through the exchange rate (Campillo, Miron, 1997). Even a restrictive fiscal policy, or raising taxes, can lead to inflation, because of the prices' sensitivity to costs.

Monetary policy can also upset fiscal policy (Beetsma, Bovenberg, 1998, 1999). Interest rates are one of the main factors of accumulation and investments, and therefore, production. Besides that, interest rates have a huge significance in financing public debt. Inflation too has a significant effect on public finances. There is a rule in economic theory, known as the Tanzi effect, which states that, during hyperinflation, taxes are completely insignificant because of the time lag between the moment of the formation of a tax obligation, and the moment of the execution of a tax obligation (Tanzi, 1977). During this time lag, money loses its value, and the government loses tax revenue. This is exactly the reason why inflation is the primary target in most central banks today.

It is, therefore, not the question which of the policies the government will use for creating a desirable economic environment, but only which one will be accentuated, and that automatically produces the need for creating a coordinated strategy for the other one. In order to coordinate these policies successfully, and to correctly anticipate all the effects of every undertaken measure, one needs to know all the repercussions of the two policies on one another (Delong, Summers, Feldstein and Ramey, 2012). Creating a coordinated fiscal and monetary policy, taking into consideration that their goals are sometimes opposite, is in fact the game theory, and the ultimate goal is to maximize the summed gain. For this to work, it is necessary to institutionally regulate relations between the subjects of both monetary and fiscal policy, for without that, it is very optimistic to expect that they are going to see the big picture. Every one of them will stay focused on their own goals, and the summed gain will be unsatisfactory. The government will worry only about the budget, and the central bank will worry only about inflation, as long as their relations are not regulated. The key lies in the fact that, even though they are limiting factors to one another in a tight perspective, in the long term, it is only possible to achieve stable growth with low inflation, and an ultimately high living standard, by coordinately managing both monetary and fiscal policy.

3. THE MONETARY AND FISCAL POLICIES' INFLUENCE ON THE ECONOMIC DEVELOPMENT OF SELECTED COUNTRIES[2]

Based on the data about the fiscal and monetary policy in the twelve selected countries, from year 2000 to 2015, as well as the results measured by the ratio between the GDP and the unemployment rate of the workforce in the same period, we will search for the connection between these two, and the answer to the question as to what extent certain elements of the mentioned policies have influenced the achieved results. We will use multiple regression, with a simultaneous inclusion of all independent variables into the

[2] In this section we used Soldić-Aleksić J. (2011). *Primenjena Analiza Podataka*, Ekonomski fakultet u Beogradu, pp. 186-239.

model, while conducting the influence of independent variables on the dependent variable on the hierarchical scale. Independent variables are *government expenditure*, representing fiscal policy, and *monetary aggregate M2* and *interest rate*, representing monetary policy, and the dependent variable is the *GDP/Unemployment rate of workforce* ratio.

The result of the cluster analysis are four groups of countries regarding two parameters: GDP and unemployment of the workforce. That is a step in creating a purposive stratified sample by taking one country from every cluster, in order to avoid the analysis of only countries similar to each other. We chose to do multiple regression on the USA, Serbia, Germany and China. The standard error – α, is set on 5%, or 0.05. Zero hypothesis – H0 is: There are no connections between the independent variables and the dependent one; the first hypothesis – H1 is: there is a connection between at least one of the independent variables and the dependent one.

3.1. Multiple regression – The USA

The Correlations table (Table 1) shows the Pearson correlation, Significance and number of years which we took into consideration. The Pearson correlation indicates the strength of the connection between the data, and it varies from -1 to 1, where -1 is the least strong relation, and 1 is, obviously, the strongest one. The third row of the table shows the Significance, which, if smaller than the risk of error, in this case 0.05, means that we dismiss the zero hypothesis, H0: There is no connection between the independent and the dependent variable; and accept the first hypothesis, H1: There is a significant connection between the independent and the dependent variable. As we can see, only the significance for the interest rate is lower than 0.05, but for the other two independent variables, there is a significant connection, and we, therefore, accept the first hypothesis, i.e. that there is a significant connection between at least one independent variable and the dependent one.

Table 1 Correlations between independent and dependent variables in the USA

		GDP/Unemployment
Pearson Correlation	Government Expenditures	.022
	M2	.173
	Interest Rate	.449
Sig. (1-tailed)	Government Expenditures	.468
	M2	.261
	Interest Rate	.040
N		16

Table 2 shows that the multiple correlation coefficient – R equals 0.787, which indicates a very strong correlation between the independent and the dependent variable. The determination coefficient – R^2 equals 0.619, which tells us that 61.9% of the variability of the GDP/Unemployment ratio is explained by the model. The adjusted determination coefficient takes into account the number of independent variables and the number of observations. The big difference between the adjusted and the simple determination coefficient indicates that we have a relatively small number of observations -16, and that the model would be more valid with more observations. Considering that we are doing the same research using data from four countries, we will still try to draw some conclusions based on fewer observations.

Testing of the statistical validity or justification of using particular variables is done by, among others, F statistics:

$$F = \frac{R_2^2 - R_1^2}{1 - R_2^2} \frac{d_2}{d_1 - d_2} \quad (1)$$

In this iteration, R_2^2 and R_1^2 are determination coefficients using higher and lower number of variables and d_2 and d_1 are corresponding levels of freedom. The difference between R_2^2 and R_1^2 is R Square Change.

Table 2 Model summary statistics, the USA

					Change Statistics					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.787	.619	.524	3.86394E11	.619	6.508	3	12	.007	1.158

a. Predictors: (Constant), Interest rate, Government expenditure, M2
b. Dependent Variable: GDP/Unemployment

For testing the assumptions of linear regression it is of great significance to follow the residuals. Assumptions are:

1. Normal distribution
2. Linearity
3. Heteroscedasticity

The fulfillment of these assumptions can be tested using Scatter plot (Fig. 1), which shows standardized values of dependent variable on an X axis and standardized residuals on a Y axis.

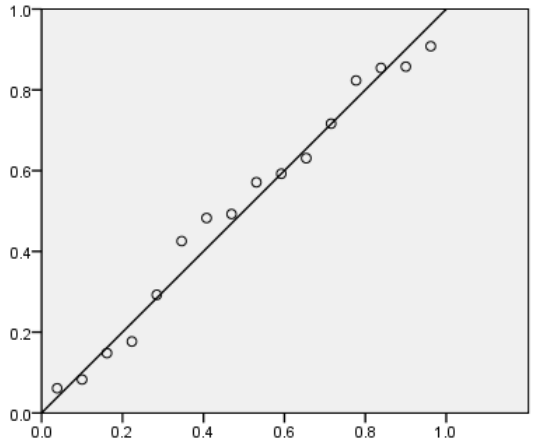

Fig. 1 Scatter Plot, dependent variable - GDP/Unemployment in the USA

In this analyzed case, Scatter Plot shows mostly sporadic deviations of standardized residuals from normal distribution on a 45ºline. This further proves the absence of heteroscedasticity of residuals and presence of only sporadic atypical dots. The same can be proved by a Histogram for analyzed dependable variable – GDP/Unemployment in the USA. Namely, the Histogram shows quite normal distribution of data.

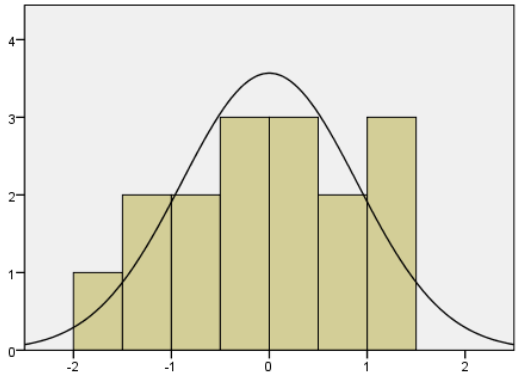

Fig. 2 Histogram for the dependent variable - GDP/Unemployment in the USA

Table 3 Testing the model for the USA, ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.915E24	3	9.716E23	6.508	.007[a]
	Residual	1.792E24	12	1.493E23		
	Total	4.706E24	15			

a. Predictors: (Constant), Interest rate, Government expenditure, M2
b. Dependent Variable: GDP/Unemployment

The ANOVA (Analysis of Variance) procedure, showed in Table 3, tests the general validity of the model. The so-called F-test shows the correlation between the explained and the unexplained variability of the dependent variable. In this model, the F value of 6.508 and Sig. of 0,007 indicates that the determination coefficient is definitely different from zero.

Table 4 Coefficients of influence for independent variables, the USA

Model		Unstandardized Coefficients		**Standardized Coefficients**	Collinearity Statistics	
		B	Std. Error	**Beta**	Tolerance	VIF
1	(Constant)	1.248E12	7.903E11			
	Government Expenditure	-.898	.622	**-.650**	.157	6.384
	M2	321178.678	109822.016	**1.337**	.152	6.585
	Interest Rate	2.363E11	6.130E10	**.895**	.589	1.699

The Coefficients table is the most significant one for creating a model. In the second column of this table, there are B coefficients, which are usually used for representing the numerical influence of every independent variable. However, for our purposes, the Standardized Beta Coefficients (fourth column) are more suitable because they eliminate the effect of huge numerical differences between the expressions of independent variables on the model itself. Based on Table 8, we can create a model:

$$\frac{GDP}{Unemployment} = 1.248.000.000.000 - 0{,}650 * E + 1{,}337 * M2 + 0{,}895 * i \qquad (2)$$

In this model (and further), -E- stand for Government Expenditures, M2 is clear and -*i*- is interest rate. In case of the USA, it is noticeable that monetary policy had higher contribution to GDP/Unemployment of workforce ratio. That means that the American economic policy is created in such a way that the monetary policy has a dominant role in achieving economic goals.

3.2. Multiple regression – The Republic of Serbia

The Pearson correlation indicates a very strong correlation between both government expenditures and M2 aggregate and the GDP/Unemployment ratio. Interest rate, however, does not affect the GDP/Unemployment so strongly. The third row of the table shows that all three independent variables have a Significance under 0.05, which means that there is a significant connection between the independent and the dependent variable.

Table 5 Correlations between independent and dependent variables in Serbia

		GDP/Unemployment
Pearson Correlation	Government Expenditures	.891
	M2	.700
	Interest Rate	-.563
Sig. (1-tailed)	Government Expenditures	.000
	M2	.001
	Interest Rate	.012
N		16

Table 6 Model summary statistics, Serbia

					Change Statistics					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.892[a]	.795	.744	3.51673E8	.795	15.528	3	12	.000	1.104

a. Predictors: (Constant), Interest rate, M2, Government expenditures
b. Dependent Variable: GDP/Unemployment

The adjusted determination coefficient shows that 74.4% of the dependent variable's variability is explained by the model, so the model is valid.

Table 7 Testing the model for Serbia, ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5.761E18	3	1.920E18	15.528	.000[a]
	Residual	1.484E18	12	1.237E17		
	Total	7.245E18	15			

a. Predictors: (Constant), Interest rate, M2, Government expenditures
b. Dependent Variable: GDP/Unemployment

ANOVA confirms the validity of the model, because the explained part of variability is 15.528 times greater than the unexplained one, and Sig. is lower than 0.05.

Table 8 Coefficients of influence for independent variables, Serbia

Model		Unstandardized Coefficients		**Standardized Coefficients**	Collinearity Statistics	
		B	Std. Error	**Beta**	Tolerance	VIF
1	(Constant)	1.481E8	5.040E8			
	Government Expenditure	.263	.067	**.872**	.347	2.884
	M2	2.717	715.387	**.001**	.377	2.653
	Interest Rate	-4314907.744	2.375E7	**-.030**	.608	1.644

Based on the data from the Coefficients table, we create a model:

$$\frac{GDP}{Unemployment} = 148.100.000 + 0{,}872 * E + 0{,}001 * M2 - 0{,}030 * i \qquad (3)$$

In the case of Serbia, the coefficient for government expenditure of 0.872 shows that fiscal policy had much higher contribution to GDP/Unemployment of workforce ratio than M_2 (0.001) and interest rate (0.030). Therefore, opposed to the USA, Serbia uses predominantly fiscal policy as an instrument for achieving economic goals.

3.3. Multiple regression – The Federal Republic of Germany

The Pearson correlation shows an extremely strong correlation between both government expenditures and M2 aggregate and the GDP/Unemployment ratio. The correlation between the interest rate and the GDP/Unemployment ratio is, however, extremely weak. The third row shows significance, which is lower than 0.05 for every independent variable. Therefore, there is a significant correlation between the independent and the dependent variable.

Table 9 Correlations between independent and dependent variables in Germany

		GDP/Unemployment
Pearson Correlation	Government Expenditures	.867
	M2	.976
	Interest Rate	-.939
Sig. (1-tailed)	Government Expenditures	.000
	M2	.000
	Interest Rate	.000
N		16

Table 10 Model summary statistics, Germany

					Change Statistics					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.978[a]	.956	.946	4.63988E10	.956	87.948	3	12	.000	1.311

a. Predictors: (Constant), Interest rate, Government expenditures, M2

The adjusted determination coefficient indicates that 94.6% of the dependent variable's variability is explained with the model. This model explains the variability of the dependent variable very successfully.

Table 11 Testing the model for Germany, ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5.680E23	3	1.893E23	87.948	.000[a]
	Residual	2.583E22	12	2.153E21		
	Total	5.939E23	15			

a. Predictors: (Constant), Interest rate, Government expenditures, M2
b. Dependent Variable: GDP/Unemployment

The F-test shows that the correlation between the explained and the unexplained part of the variability of the dependent variable is very good, and that the explained part is 87.948 times greater than the unexplained one.

Table 12 Coefficients of influence for independent variables, Germany

Model		Unstandardized Coefficients		**Standardized Coefficients**	Collinearity Statistics	
		B	Std. Error	**Beta**	Tolerance	VIF
1	(Constant)	-2.440E11	2.440E11			
	Government Expenditure	.146	.186	**.094**	.254	3.937
	M2	368382.470	101726.159	**.786**	.077	12.990
	Interest Rate	-1.619E10	2.734E10	**-.115**	.097	10.360

Based on the data from the Coefficients table, we create a model:

$$\frac{GDP}{Unemployment} = -244.000.000.000 + 0{,}094 * E + 0{,}786 * M2 - 0{,}115 * i \qquad (4)$$

It is clear that monetary policy had higher influence on GDP/Unemployment of workforce ratio than fiscal policy in Germany. Namely, coefficients of 0.786 and 0.115 for the M_2 monetary aggregate and for the interest rate, in that order are higher than 0.094 – coefficient for the contribution of government expenditure to the GDP/Unemployment of workforce ratio.

3.4. The multiple regression – The People's Republic of China

The third column of the Correlations table shows us the influence of independent variables on the GDP/Unemployment ratio. The Pearson correlation indicates a very strong correlation between both government expenditures and M2 aggregate and the GDP/Unemployment ratio. The correlation between interest rate and the GDP/Unemployment ratio is not that strong. The third row of the table shows a significance which is lower than 0.05 for the independent variables of government expenditures and M2 aggregate. Therefore, correlation between the independent variables and the dependent one exists.

Table 13 Correlations between independent and dependent variables in China

		GDP/Unemployment
Pearson Correlation	Government Expenditures	.999
	M2	.995
	Interest Rate	.095
Sig. (1-tailed)	Government Expenditures	.000
	M2	.000
	Interest Rate	.363
N		16

Table 14 Model summary statistics, China

					Change Statistics					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.999[a]	.999	.999	3.26099E10	.999	3360.763	3	12	.000	1.457

a. Predictors: (Constant), Interest rate, M2, Government expenditure
b. Dependent Variable: GDP/Unemployment

The adjusted determination coefficient tells us that an unbelievable 99.9% of the variability of the dependent variable is explained by the model. Therefore, the model explains the variability of the dependent variable successfully.

Table 15 Testing the model for China, ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.072E25	3	3.574E24	3360.763	.000[a]
	Residual	1.276E22	12	1.063E21		
	Total	1.073E25	15			

a. Predictors: (Constant), Interest rate, M2, Government expenditure
b. Dependent Variable: GDP/Unemployment

In this case, the explained part of the mentioned variability is 3360.763 times greater than the unexplained one, which undoubtedly confirms validity of the model.

Table 16 Coefficients of influence for independent variables, China

Model		Unstandardized Coefficients		**Standardized Coefficients**	Collinearity Statistics	
		B	Std. Error	**Beta**	Tolerance	VIF
1	(Constant)	-2.628E11	1.072E11			
	Government Expenditure	2.072	.229	**1.132**	.006	158.635
	M2	-2774.866	2568.885	**-.135**	.006	158.613
	Interest Rate	7.736E10	3.430E10	**.023**	.995	1.005

Based on the data from the Coefficients table, we create a model:

$$\frac{GDP}{Unemployment} = -262.800.000.000 + 1{,}132 * E - 0{,}135 * M2 + 0{,}023 * i \quad (5)$$

In the People's Republic of China, fiscal policy had the highest contribution to GDP/Unemployment of workforce ratio. It is well known that China has led uniquely restrictive fiscal policy for many decades, and as we can see, the results are impressive.

4. RESULTS

The results of the conducted analysis are models created on the basis of the data from the first fifteen years of the twenty-first century for four countries, one of which is Serbia. Two of the countries are developed countries, i.e. the USA and Germany, and the fourth

one is China, the most influential country of today, even though, by GDP per capita, it is still, formally at least, a developing country.

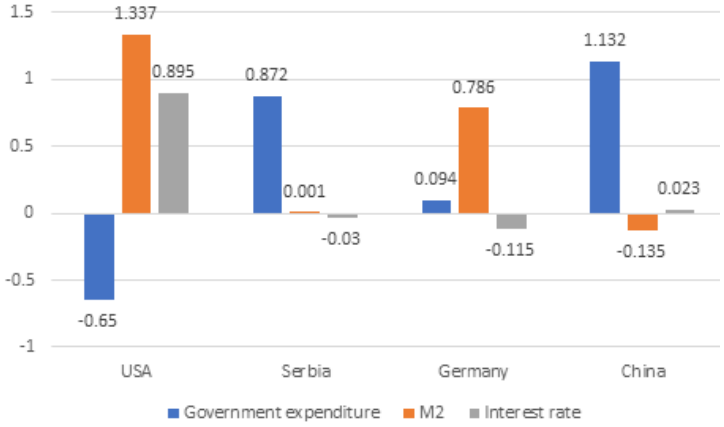

Fig. 3 Parallel view of the regression coefficients

Based on Figure 3, it is noticeable that the models for Serbia and China are mutually similar, just like the models for the USA and Germany. Namely, the representatives of the developed countries have created their economic policy in such a way that monetary policy had significantly more influence than fiscal policy did on the standard of living, measured by the GDP/Unemployment ratio. Germany and the USA have, therefore, mainly used monetary policy to stimulate economic growth, keep the unemployment down (Wu, Xia, 2016) and hold the inflation around the target level. On the other hand, in Serbia and China, the fiscal policy had the greatest influence on the dependent variable. It is well-known that China constantly used a restrictive fiscal policy for more than fifty years, and created huge amounts of the budget surplus, which was almost exclusively invested in American bonds (Li, 2008). This policy was definitely fruitful. However, it required unimaginable discipline over a very long term. It is also proven that a big part of effects of fiscal policy comes in the future. There is a study that showed the effect of the fiscal policy comes in 1-2% after five years, 2-3% after ten years and 4% after 15 years (Gemmell, Kneller, Sanz, 2011).

CONCLUSION

Every option, therefore, has its price, and the task for the creators of an economic policy is to choose the most optimal solution in the given environment, and to ensure the implementation of the adopted measures at the institutional level in order to accomplish the planned goals. The tricky part is that it is necessary to create such a policy strategically, for a long period of time, and then only cosmetically adjust the measures to amortize the changes and ensure that the country stays on its path. This is especially difficult today, and is becoming more and more difficult every day, because of the extremely dynamic environment that we live in. Technological development is changing every single aspect of our lives on a daily basis, and it cannot be ignored. Economic policy is therefore going to have to adapt to those changes, and it is going to be a huge challenge for the future.

It is also of great importance not to forget that measures of economic policy are not goals themselves. They are only instruments for achieving other goals, which can be summarized in maximizing the production and export. That is the only way of raising the standard of living, the ultimate economic, social and political goal for every single country in the world.

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RAZVOJNI EFEKTI MONETARNE I FISKALNE POLITIKE U SAVREMENIM USLOVIMA

Jedan od najvećih problema u ekonomskoj teoriji je oduvek bila koordinacija različitih elemenata ekonomske politike, a posebno fiskalne i monetarne politike. U prošlosti je bilo ekonomskih teorija koje su favorizovale jednu u odnosu na drugu, ali u savremenim uslovima, činjenica je da je pravi odgovor samo u koordinisanom vođenju obe politike. Stoga, svaka mera monetarne politike mora biti propraćena određenom akcijom u fiskalnoj politici i obrnuto. Pitanje ostaje da li fiskalna ili monetarna politika treba da ima prioritet prilikom donošenja odluka i da li postoji šablon za kreiranje ekonomske politike. Empirijski podaci su najsvrsishodniji izvor za odgovor na ova pitanja, stoga ćemo koristiti promenjive iz četiri različite zemlje za poslednjih petnaest godina, kako bismo pokušali da pronađemo vezu između fiskalne i monetarne politike i životnog standarda.

Ključne reči: *Ekonomska politika, monetarna politika, fiskalna politika*

CIP - Каталогизација у публикацији
Народна библиотека Србије, Београд

33+007

FACTA Universitatis. Series, Economics and Organization / editor in chief Dejan Spasić. - Vol. 1, No 1 (1993)- . - Niš : University of Niš, 1993- (Niš : Unigraf-x-copy). - 24 cm

Tromesečno. - Tekst na engl. jeziku. - Drugo izdanje na drugom medijumu: Facta Universitatis. Series: Economics and Organization (Online) = ISSN 2406-050X
ISSN 0354-4699 = Facta Universitatis. Series: Economics and Organization
COBISS.SR-ID 87230727

FACTA UNIVERSITATIS
Series
Economics and Organization
Vol. 15, N° 4, 2018

Contents